

Project AIR FORCE

FEDERAL CONTRACT BUNDLING

A FRAMEWORK FOR
MAKING AND JUSTIFYING
DECISIONS FOR
PURCHASED SERVICES

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PREFACE

The Department of Defense (DoD) is giving increasing attention to “bundling” the services that it buys from external sources—asking **single sources to provide multiple services at a single site, for example**, or to provide a given service at multiple sites. Commercial buyers recognized for their successful purchasing practices are increasing their use of bundled contracts, for services very much like those that the DoD buys, to improve performance and reduce costs. Available historical evidence within DoD indicates that such bundling is likely to reduce the costs of these services in the DoD context as well.

Is increased bundling appropriate in DoD and other federal agencies facing similar decisions? The federal government has clearly stated socioeconomic goals to help small businesses by giving them opportunities to provide goods and services to government agencies. How would DoD and other federal agency bundling affect small businesses? How should these agencies balance potential benefits from bundling against the potential negative effects that bundling might have on small-business providers? The federal small-business and acquisition policy communities are currently giving these questions their close attention.

To support analyses of these policy issues, we discuss in this report recent legislation designed to protect small businesses by ensuring that bundling occurs only when it is likely to generate substantial increases in performance and/or reductions in cost for a federal buyer. After reviewing the relevant policy evaluation issues, the report proposes a methodology that buying agencies could use to gather the information they need (1) to decide when and how to bundle the ser-

vices they buy to support broad agency goals, and (2) to justify these decisions in a way that satisfies the requirements of the recent legislation.

This research should interest federal agencies considering bundling services into large, integrated contracts—especially those organizations charged with recontracting and Office of Management and Budget Circular A-76 activities within the Air Force, which sponsored this work, and the DoD.

Research on this topic and related contracting issues continues in the Resource Management Program of RAND's Project AIR FORCE. For additional information or to convey comments on this report, please contact Dr. Laura H. Baldwin at (310) 393-0411 x6537 or at Laura_Baldwin@rand.org.

PROJECT AIR FORCE

Project AIR FORCE, a division of RAND, is the Air Force Federally Funded Research and Development Center (FFRDC) for studies and analyses. It provides the Air Force with independent analyses of policy alternatives affecting the development, employment, combat readiness, and support of current and future aerospace forces. Research is performed in four programs: Aerospace Force Development; Manpower, Personnel, and Training; Resource Management; and Strategy and Doctrine.

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SUMMARY

An organization “bundles” the services that it purchases when it consolidates activities previously provided by separate sources and purchases these services through a single contract from a single provider. Speaking broadly, bundling can take four forms:

- Purchasing two or more separate services—for example, janitorial and building maintenance—from a single provider
- Purchasing a single service previously provided by separate sources—for example, payroll services at separate locations—from a single provider
- Purchasing planning, oversight, or other management services—for example, performance monitoring or coordination—together with the services planned, overseen, or managed
- Purchasing services provided in separate periods of time—for example, successive years—from a single provider under one agreement rather than from several providers under separate agreements.

The frequency of bundling, as defined above, is increasing in the commercial sector. It is growing fastest among firms recognized by their peers as “best in class” in purchasing activities. This persistent and pervasive trend strongly suggests that the buyers and sellers using bundling have discovered benefits that make bundling worthwhile. As we shall see below, many reasons exist to believe that bundling can provide significant benefits in the form of improved performance and reduced costs. Organizations seeking to improve

their own performance or reduce their costs increasingly view bundling as a best-business practice that they want to emulate.

As Air Force organizations become more familiar with these commercial trends, there is growing interest in bundling. But the goals of the Air Force, the Department of Defense (DoD), and other federal organizations differ from those of commercial firms. Federal laws and regulations commit the Air Force and other federal organizations “to insure that a fair proportion of the total purchases and contracts or subcontracts for property and services for the Government . . . be placed with small business enterprises” and to maintain wherever possible free and open competition among the sources that the government solicits to provide services to the federal government. Strong constituencies, inside and outside the Air Force, ensure that the Air Force takes these goals seriously. When bundling reduces the opportunities for small businesses and thereby either threatens the “fair proportion” of total federal purchases going to small businesses or reduces the number of potential sources competing for work, these constituencies sound the alarm. They ensure that the Air Force fairly and effectively balances any efficiency gains it might receive from bundling the services that it purchases with any negative effects that Air Force bundling might have on small businesses or competition.

To balance the relevant pros and cons of bundling, an Air Force buyer needs a clear definition of the performance and cost improvements offered by bundling in a particular setting that it can weigh against any negative effects on small businesses or competition in that setting. The Small Business Reauthorization Act (SBRA) of 1997 addresses the need for such a definition and provides guidelines for balancing benefits and costs. It allows a federal agency to bundle two or more requirements for goods or services that were previously purchased through separate smaller contracts into a single solicitation, which is unlikely to be suitable for award to a small business, *only* if the benefits associated with such a bundled contract are “measurably substantial” relative to an unbundled baseline. The SBRA interprets benefits broadly to include cost savings and a variety of dimensions of performance improvements such as improved quality. This legislation does not apply when the bundling occurs in the context of an Office of Management and Budget (OMB) Circular

A-76 competitive sourcing study; it does apply to any effort to bundle work provided by existing contracts.

The Deputy Assistant Secretary of the Air Force for Contracting (SAF/AQC) asked RAND's Project AIR FORCE to develop a way to measure and justify the benefits associated with bundling services that addresses the concerns above. The Air Force needs a general way to understand where bundling is compatible with its goals and, specifically, to justify desirable bundles in a way that is compatible with SBRA requirements. This report presents the approach that we developed. It should be applicable in any part of the Air Force, the DoD, or any other federal agency considering the purchase of bundled services.

Our approach identifies the kinds of benefits that bundling can provide. Building on this taxonomy, it proposes a way to elicit the information that the Air Force needs on bundling in a particular setting from providers likely to have that information. And it suggests how the Air Force can integrate market research on bundling with a broader strategic approach to performance-based services acquisition planning to support requests for information on bundling in specific settings.

THE NATURE OF POTENTIAL BENEFITS FROM BUNDLING

Bundling yields benefits in some settings and not in others; some settings offer greater opportunities for benefits than others; and how the bundling is done matters. In this sense, benefits from bundling are very much like those from investments in reliability and maintainability. Like bundling, the reliability and maintainability of complex systems have risen and continue to rise. It is thus clear that investments in reliability and maintainability *can* be beneficial. But it is impossible to predict the size of such benefits outside the context of a specific investment. The engineers designing such investments give careful attention to the technologies in question and make investments that change these technologies in carefully designed ways to get the most from each dollar invested. Exactly the same logic applies to bundling. Officials designing new bundles should give careful attention to the specific activities in question and the opportunities they present to benefit from bundling. They should then

design bundles carefully to take full advantage of these opportunities.

Commercial experience with bundling points to a number of opportunities for bundling that *can* yield benefits if appropriately exploited, depending on the characteristics of the services involved. Some directly reduce costs. Others improve performance and can reduce total ownership cost as a consequence.

Opportunities for cost reductions include the following:

- A wide variety of scale economies in labor that allow the use of fewer personnel
- Greater leverage with a provider's suppliers when it buys in larger volume
- A reduced provider profit margin resulting from greater buyer leverage with a provider
- More efficient use of capital and information assets shared across services in a bundle
- Reductions in a variety of duplicate overhead and management information system expenses.

Opportunities for performance improvements that can reduce total ownership cost include the following:

- Alignment of related elements of a bundle to improve coordination, responsiveness, and accountability
- Alignment of related elements of a bundle to improve buyer-oriented measurement of, and hence continuous improvement of, performance
- Greater buyer leverage to induce a provider to improve performance
- Ease in devolving responsibility to the provider without losing control, which maintains the buyer's management focus
- Greater consistency in service levels across sites

- Reduced turmoil and turnover for the provider's personnel when bundling stabilizes the workload and expands career opportunities.

These potential benefits are important, but they do not mean that bundles should be infinitely large. Bundling is subject to the same diseconomies inherent in any organization; larger organizations involve more layers of management, less direct communication among decisionmakers, and more opportunities for divergent interests to emerge and dilute a single, unified vision in the organization. Any effort to bundle must offer benefits, like those above, that are large enough to offset these generic and ever-present diseconomies of size. Commercial firms often progressively increase the size of their bundles over time to test which offer benefits large enough to overcome these diseconomies and which do not. Air Force buyers can do the same.

ELICITING INFORMATION ON BUNDLING REQUIRED TO COMPLY WITH THE SBRA

Before proceeding with an acquisition strategy that could lead to a contract containing bundled requirements, the SBRA requires a government agency to conduct market research to determine whether bundling of the requirements is necessary and justified. To be "necessary and justified," a bundle must yield benefits that exceed a regulatory threshold. The level of the threshold depends on the size of the proposed bundle and the types of benefits used to justify it. Benefits can come from direct cost savings or performance improvements, but all must be stated in clear monetary terms relevant to the thresholds. If the agency expects the bundle to exceed \$10 million a year on average, the agency must provide an analysis of these benefits and develop a plan to protect small businesses affected by the bundle.

When estimating the benefits from a bundle, the estimator must recognize that experienced service providers know a great deal more about the cost and performance implications of the opportunities that bundling offers in a particular setting, as described above, than buyers typically do. Providers create the cost and performance-related benefits described above in the ways that they structure and

manage bundles. They have the best historical experience, planning tools, and expertise to determine what cost and performance-related benefits to expect in a particular setting.

A key principle of performance-based services acquisition says that, in these circumstances, the buyer should develop a method that (1) tells the providers with the best information exactly what it wants and (2) induces them to provide exactly what the buyer wants. If the buyer tried to develop this information itself, it could not exploit the comparative advantage of its potential providers and, as a result, would be unlikely to benefit from the full scope of their capabilities.

To obtain the information that Air Force buyers need to comply with the SBRA, Air Force buyers should use an approach with the following characteristics:

- It should be simple. Providers have many opportunities to sell services to commercial organizations, particularly if they are well regarded. They will invest the resources required to inform an Air Force query only if it is easy for them to do so.
- It should give providers all the information they need to respond. This is one element of simplicity; it makes the providers' job much easier. Beyond this, it is critical to give them enough detail about the particular setting for proposed bundling so that they can accurately apply their experience and models.
- It should comply with all Federal Acquisition Regulations (FAR) requirements to ensure fair communication between an Air Force buyer and potential providers that does not favor or disadvantage any one provider.
- It should protect any proprietary information that providers submit, particularly information that could be considered competition-sensitive in a follow-on source selection.
- It should hold providers accountable for the accuracy of the information they provide. If such information proves to be inaccurate in one bundling review, Air Force buyers should preserve that fact and use it to judge the usefulness of any future submission in another bundling review.

- It should learn from experience. As Air Force buyers and their potential providers address more and more bundling situations, they will all learn more effective ways to elicit and apply the information needed. Air Force buyers should monitor their experience and adjust the process as they accumulate experience with it.

The new form of request for information (RFI) that the Air Force increasingly uses to communicate with potential service providers can be an effective tool for eliciting information about potential bundling benefits while being compatible with the principles above. Because Air Force buyers have considerable experience with this tool, they need learn only to shape it to the particular needs of eliciting bundling information. Important factors include the following:

- Air Force buyers should be clear about what kinds of benefits they value and thus potential providers should consider. This report provides a detailed list based on the benefits discussed in this summary.
- For performance-related benefits, Air Force buyers should provide clear and simple rules on how to translate these into monetary terms relevant to the Air Force's interests. The simplest way to do this will be to express performance-based benefits in terms of their effects on total ownership costs. This is not easy to do. Air Force buyers should continue to work, over time, to provide simple algorithms to do this.
- Air Force buyers should anticipate the calculations that providers must do and provide all the necessary information. Particularly important is detailed information on the unbundled baseline, including all available information on measured performance levels. The more information an Air Force buyer can provide, the more subtlety providers can reflect in their calculations.
- Air Force buyers should seek only enough information to ensure that proposed bundles meet the SBRA's regulatory thresholds. As long as these thresholds are clearly exceeded, a provider need not provide an accurate estimate of additional benefits. Focusing on the threshold should promote simplicity and help potential providers protect their proprietary data.

- As long as thresholds are clearly satisfied, Air Force buyers should promote the use of simplified algorithms that limit the need for detailed calculations, detailed communication between the Air Force and potential providers, and providers guessing about the Air Force's intentions.

This report provides details on how to implement such principles to elicit the information that Air Force buyers need from providers with real bundling experience.

STRATEGIC PLANNING FOR BUNDLING AS ONE ELEMENT OF AN ACQUISITION PLAN

Even though the approach described here devolves a great deal of responsibility to providers, it also places significant demands on Air Force buyers. Buyers must become expert at designing and executing RFIs like those described. They must learn how to frame questions about bundling benefits so that they obtain the information they need. They must learn what information potential providers really need from the Air Force to estimate bundling benefits in particular settings. In particular, they must learn simple ways to value bundling-related performance improvements in monetary terms. They must learn how to judge the responses that they receive from RFIs on bundling benefits, weigh alternative points of view, and produce a consensus product consistent with the Air Force's various goals and SBRA requirements in particular. And Air Force buyers must track statements made by various potential providers and compare their estimates with actual benefits realized from bundling to improve the Air Force's ability to elicit and judge information in the future. Just as outsourcing a service requires the Air Force to maintain a core competency in outsourcing that service rather than providing it, so eliciting bundling information from external sources requires the Air Force to develop and maintain a core competency in eliciting that information rather than providing it in-house.

Core competencies are most effective when institutionalized. Air Force buyers must find institutional homes for the tasks required to elicit and apply information on bundling benefits. In all likelihood, these Air Force buyers do not need new institutions to perform these tasks. Bundling is only one factor considered in acquisition planning.

As Air Force buyers extend the application of performance-based services acquisition to all aspects of acquisition planning, they should include the bundling-related activities discussed here in those plans. The organizations that Air Force buyers set up to conduct continuing market research, conduct effective RFIs, and design performance-based acquisitions should take on the corresponding responsibilities associated with bundling. Such an approach will ensure that the Air Force integrates its bundling decisions with its broader services acquisition agenda and thereby realizes the greatest benefits available from bundling.

Such institutionalization could help Air Force buyers pursue effective bundling strategies even where the SBRA does not apply. For example, a suitably adapted variant on the approach discussed here could be applied in the setting of specific OMB Circular A-76 studies—even though the SBRA does not require buyers to formally justify bundles in that context—to learn about potential bundling benefits there.

ACKNOWLEDGMENTS

Although we are unable to identify people and firms by name because of our pledge of confidentiality, we wish to acknowledge the many employees of the buyer and provider firms that we interviewed. They graciously donated their time to help us understand innovative bundling practices and potential benefits and risks associated with contract bundling. In addition, we thank the many Air Force organizations that we visited and the Small Business Administration for helping us understand the legislation defining the ability of federal agencies to use bundled service contracts. Without the cooperation of these people, this research would not have been possible.

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Nonetheless, the authors take full responsibility for all assertions and interpretations found in this report.

ACRONYMS

AFCQMI	Air Force Center for Quality and Management Innovation
AFMIA	Air Force Manpower and Innovation Agency
ALC	Air Logistics Center
CICA	Competition in Contracting Act
CLM	Council of Logistics Management
DLA	Defense Logistics Agency
DoD	Department of Defense
DoL	Department of Labor
DVD	Direct Vendor Delivery
FAR	Federal Acquisition Regulations
FFRDC	Federally Funded Research and Development Center
FM	Facility Management
FY	Fiscal Year
GAO	General Accounting Office
GSA	General Services Administration
LTL	Less-Than-Truckload

MEO	Most Efficient Organization
MIS	Management Information System
OMB	Office of Management and Budget
PBSA	Performance-Based Services Acquisition
PCR	Procurement Center Representative
PSM	Purchasing and Supply Management
RFI	Request for Information
RFP	Request for Proposal
R-TOC	Reduction in Total Ownership Cost
SBA	Small Business Administration
SBRA	Small Business Reauthorization Act
TARS	Tethered Aerostat Radar System
TQM	Total Quality Management

Chapter One

INTRODUCTION

Commercial firms recognized for their purchasing excellence are progressively changing their purchasing and supply management practices. They are finding that they can increase performance and reduce costs by shifting toward larger, more integrated (i.e., bundled) service contracts.

The Air Force, as well as the Department of Defense (DoD) and other federal agencies, is considering ways to adapt and apply selected best purchasing and supply management practices that it observes in the commercial sector. But because all federal agencies have a legal obligation to support small businesses through their purchases, and because large, bundled contracts generally are beyond the capabilities of small businesses, application of contract bundling within the federal context presents particular concerns and challenges. Acquisition-related legislation such as the Small Business Act and the Small Business Reauthorization Act (SBRA) of 1997 has been put into place to provide guidelines that define when federal agencies can use bundled contracts.

Although there are many important policy questions associated with the effects of new purchasing practices such as contract bundling on small businesses, we assume in this report that the SBRA appropriately balances these issues. We take as given the Air Force's desire to apply the new purchasing practices, such as the use of bundled contracts, when there are clear performance and/or savings benefits to the buying organization. To support this, we propose a methodology that the Air Force could use to ensure that its choices of bundles properly balance (1) its desire for improved performance and re-

duced cost with (2) its legal obligations to small business, as reflected in recent legislation. The methodology is proposed in general terms so that it can be tailored to the individual circumstances of specific contracting activities.

This methodology was created in response to a request from the Deputy Assistant Secretary of the Air Force for Contracting (SAF/AQC) for a general methodology that can be tailored to individual service contracting circumstances to (1) decide when a bundled acquisition strategy supports broad Air Force goals for military capability, quality of life, and cost and, when bundling does support these goals, (2) facilitate gathering the information necessary to justify the decision in light of legislative guidelines. We discuss the details of this methodology below.

RAND'S ANALYTIC APPROACH

We used a two-part approach to create the bundling methodology.¹ First, we reviewed the relevant business, management, economics, and trade literatures to search for information on (1) bundling trends and methodologies, (2) the benefits, costs, and risks from the buyer's perspective associated with bundling, and (3) how these benefits, costs, and risks can be, or have been, quantified in general and/or in the context of specific cases.

Second, we conducted a series of structured interviews with organizations that care about bundling issues and/or have experience with bundled service contracts. In particular, we met with

- Three Air Force organizations conducting large bundled studies subject to the rules of the Office of Management and Budget (OMB) Circular A-76²

¹See Appendix A for a description of our general methodology for research on best commercial purchasing practices.

²OMB Circular A-76 provides the policy framework for the performance of commercial activities in the federal government. This policy includes a process through which the current in-house workforce competes with private sector firms for the right to provide a service. See Gates and Robbert (2000).

- One Air Force organization conducting a large bundled recontracting activity
- Five leading-edge commercial providers of integrated facility management services and integrated logistics services³
- Four buyers of bundled facility management services that are recognized by their peers and providers as having innovative bundling strategies for these services.

We chose to focus on facility management and logistics services in our commercial sector interviews primarily for three reasons. First, there is high-level Air Force interest in reevaluating provision of these types of support services. Second, we are observing increases in the sizes of commercial contracts as well as consolidation of the broader commercial supply base for these services, indicating that there may be significant opportunities for performance and/or cost benefits associated with bundling these services into larger contracts. Third, we perceive that these services have historically provided many opportunities for small businesses to participate as prime contractors to federal agencies, raising political sensitivity to bundles that include these services. However, the principles of our proposed methodology should apply to other types of services as well, such as more technical services associated with weapon system support.

In addition, we interviewed personnel from the Air Force Office of Small and Disadvantaged Business Utilization (SAF/SB) and the Small Business Administration (SBA) who are involved in implementation of the SBRA and Air Force bundling decisions. We also interviewed personnel from the Air Force Center for Quality and Management Innovation (AFCQMI), now the Air Force Manpower and Innovation Agency (AFMIA), who serve as advisors during A-76 studies, and personnel from SAF/AQC, the Air Force office in charge of contracting policy, who represent the Air Force in discussions about implementation of the SBRA. These discussions were particularly

³Four firms provide integrated facility management services; one firm provides integrated third-party logistics services. One of the facility management providers we interviewed is a management firm that has many alliance partners, and we also met with seven of them. We found that the principal sources of benefits and levels of benefits achieved by these firms' buyers were quite similar across the two types of service areas.

helpful because the recent SBA final rule (discussed in Chapter Three), which describes how the SBA intends for the SBRA to be implemented, was unavailable prior to the conclusion of our research.

In each of our interviews with Air Force study teams and commercial firms, we sought information on the types of benefits, costs, and risks associated with bundling from the buyer's perspective and the sources of each.

In addition, in each of our Air Force study team interviews, we explored the methodology used to construct the bundle, the justification of the bundle, any obstacles to the chosen bundling strategy, the small business participation strategy, and the study team's interactions with the small business community (firms and advocates) throughout the study process. In our interviews with commercial providers of bundled services, we sought information about how the benefits, costs, and risks can be quantified, whether commercial buyers require the participation of small businesses in their bundles, and if so, the methods used to provide these opportunities to small businesses. We were primarily interested in discerning whether any general information exists on these topics, but we also discussed these questions in the context of the experiences of individual buyer firms for which these provider firms provide large bundles of services. In each of our interviews with commercial buyer firms, we focused on the methodology they used to construct their bundling strategy, the levels of benefits they received from this strategy, and how, if at all, they provide opportunities for small businesses to participate in their bundles. In our interviews with personnel from the SBA, SAF/SB, AFMIA, and SAF/AQC, we sought information about how each organization is interpreting the implications of the SBRA and the Competition in Contracting Act (CICA) of 1984 for the Air Force's ability to bundle service contracts, Federal Acquisition Regulations (FAR) changes in response to the SBRA, and the costs to small businesses resulting from bundled contracts.

OUTLINE OF THE REPORT

The remainder of this report is divided into six chapters. In Chapter Two, we discuss the revolution in best commercial purchasing and supply management practices that is influencing the Air Force's desire to change the way it acquires services. Chapter Three explains

how legislation affects the ability of federal agencies to use bundled service contracts and discusses the new skills required to make and justify decisions to bundle services. In Chapter Four, we outline the findings from our interviews and reviews of the academic and trade literature relevant to making and justifying bundling decisions and options for participation of small businesses in bundled contracts. Chapter Five discusses the benefits and risks associated with bundled service contracts. In Chapter Six, we propose a tactical bundling methodology the Air Force could use to make and justify bundling decisions, as well as a strategic framework for implementing the methodology. We conclude in Chapter Seven by discussing implications of this research for Air Force recontracting activities.

In Appendix A, we describe the general approach we use in our research on best commercial purchasing practices. Appendix B contains examples of how many successful commercial firms are strategically reducing their supply bases. In Appendix C, we provide evidence of consolidation trends within three major industries of interest to the DoD. Appendix D contains a detailed guide to the SBA's final rule, implementing the Small Business Reauthorization Act of 1997. In Appendix E, we provide a guide to estimating the monetary value of potential improvements in performance associated with contract bundling.

**WHY IS THE AIR FORCE INTERESTED IN BUNDLING
SERVICES INTO LARGER CONTRACTS?**

During the 1980s and 1990s, a revolution began in the way commercial firms purchase goods and services. For many commercial firms, purchased goods and services account for 50 to 80 percent of their total expenditures. As firms recognize the strategic importance of purchasing, they are changing their purchasing and supply management (PSM) practices to improve the performance, quality, and cost of their products and services, and thus their competitiveness. One of the keys to implementing these new PSM practices is strategic supply-base reduction. Appendix B gives examples of this trend. Buyers are reducing the number of providers that they do business with, shifting from smaller contracts with many providers to much larger bundled contracts with fewer providers.¹ Contracts are expanding in scope to include many different complementary services, and they are expanding in scale to accommodate today's global business operations.

In parallel, to meet these expanding desires of commercial buyer firms and to create economies of scale and scope, many service industries are consolidating. Through mergers and acquisitions, provider firms are gaining expertise across a greater breadth of services and encompassing a much larger scale of operations, with ex-

¹In a 1999 survey of purchasing professionals, 80 percent of respondents indicated they are taking steps to consolidate their purchases with fewer suppliers (Fitzgerald, 1999).

panded geographical presence.² This consolidation is occurring across a wide range of industries, including third-party logistics and facility management services that are of primary importance to the DoD. In addition, in automotive, tobacco, accounting, advertising, soft drink, music, wireless phone, and many other industries, fewer than five companies essentially own their domestic market and are moving toward market preeminence.³ First-tier suppliers of goods and services to many of these firms are also consolidating.⁴ Appendix C provides details on industry consolidation trends.⁵

By strategically reducing their supply bases, forming partnerships with larger, more integrated service providers, and implementing other new PSM practices, commercial buyer firms are leveraging their purchases and taking advantage of continuous improvement opportunities to capture significant benefits, such as simultaneous improved performance and reduced cost associated with the services they purchase.⁶ Strategic supply-base reduction is a necessary first step to accessing these benefits, because it is virtually impossible for buyers to form close partnerships with many providers that allow buyer and provider to work together to improve performance and cut costs over time. Buyers' purchasing infrastructure simply cannot

²See Cavinato and Kauffman (2000), Chapter 1, "The Future of Purchasing and Supply."

³See Mulligan (1999).

⁴Top candidates for further consolidations are telecommunications, internet, cable, and broadcasting services, financial services, metals mining and processing operations, utilities, food processing, and retailing (Kiplinger, September 1999).

⁵The driving forces behind many mergers are both numerous and powerful: technological change, deregulation, excess capacity, an inability to boost profits through price increases, robust stock prices, and the perceived need to grow global marketing muscle (Deogun et al., 1999). Investment requirements for sophisticated management information systems and subsequent leveraging opportunities are also contributing to this consolidation. For example, coordinated full-service global logistics services are difficult to achieve because of the heavy investments required (Bowman, 1998).

⁶For example, one facility management services provider estimates that most companies can achieve 20 percent savings by having a single company handle all services (e.g., from budgeting of building management to cleaning and technical operations) (Keyes, 1998). A survey of U.S. logistics managers who identified themselves as having significant logistics outsourcing experience found that firms outsourcing all supply chain functions achieved average first-year savings (21.3 percent) and annual second-, third-, and fourth-year savings (15.1 percent) that were more than twice as high as savings cited by firms outsourcing any of the individual logistics functions (Boyson et al., 1999).

support the effort.⁷ Chapman et al. (1998) note that companies that have simultaneously achieved the greatest performance improvements and cost reductions generally have reduced the number of their suppliers by 40 to 50 percent. A *Supplier Selection & Management Report* survey noted that, for the sixth consecutive year, reducing the supply base topped the list of practices readers say have been most effective in controlling costs (Mazel, 1998).

The Air Force wants to adopt selected best commercial PSM practices, in the form of performance-based services acquisition (PBSA), where appropriate, so that it can begin capturing the potential performance and savings benefits that characterize the experiences of innovative commercial buyer firms. Recent acquisition reform legislation is enabling many of the desired changes in federal government purchasing practices. However, it is important to keep in mind that the Air Force's goals are not the same as those of typical commercial firms. In particular, the Air Force has socioeconomic goals that are likely to require adjustments in any best commercial practices examined. From this perspective, best commercial PSM practices offer examples the Air Force can consider and then modify to make them fully compatible with the Air Force's full set of military capability, quality of life, cost, and socioeconomic goals.

⁷Michael Hammer notes that "[t]he consolidation of suppliers is, in fact, a common aspect of supply chain reengineering" (Latamore, 1999). Womack and Jones (1996) argue that it is not feasible to extend lean thinking throughout the value chain unless organizations winnow down their list of upstream and downstream supplier partners.

RELEVANT LEGISLATION AND SKILLS

As discussed in Chapter Two, the Air Force must carefully consider what bundling means within its unique circumstances and then adapt best commercial bundling practices to best meet its needs. There are two primary considerations the Air Force must take into account when examining the desirability and possibility of implementing the practice of bundling service contracts: (1) legislative requirements and (2) the purchasing skills needed to make good bundling decisions.

LEGISLATION

All federal agencies have obligations to support small businesses (including small disadvantaged, 8(a), and women-owned businesses) through their purchases of goods and services. The Small Business Act begins by specifying congressional intent:

It is the declared policy of the Congress that the Government should aid, counsel, assist, and protect, insofar as is possible, the interests of small-business concerns in order to preserve free competitive enterprise, to insure that a fair proportion of the total purchases and contracts or subcontracts for property and services for the Government (including but not limited to contracts or subcontracts for maintenance, repair, and construction) be placed with small business enterprises, to insure that a fair proportion of the total sales of

Government property be made to such enterprises, and to maintain and strengthen the overall economy of the Nation. (Sec. 2(a))¹

Although no explicit preference for prime contracting (as opposed to subcontracting) opportunities for small businesses is expressed here, the Small Business Act was amended by the Small Business Reauthorization Act of 1997 to state that federal agencies should “avoid unnecessary and unjustified bundling of contract requirements that precludes small business participation in procurements as prime contractors” (Sec. 2(j)(3)). Apparently, Congress reevaluated its position on this issue as federal agencies began to change their purchasing practices and moved toward larger contracts.² Many small businesses do not have the capabilities to self-provide or even manage the entire workscope associated with large, bundled contracts. Their primary opportunities to participate in bundled contracts are through subcontracting arrangements with large prime contractors.³

In addition to the SBRA, the Competition in Contracting Act (CICA) of 1984 also affects the ability of federal agencies to consolidate their demands for services into large, bundled contracts. We discuss the nature of both of these Congressional requirements below.

Small Business Reauthorization Act of 1997

Sections 411 through 413 and 415 of the SBRA (now Sections 2(j), 3(o), 8(d)(4)(G), and 15(e) of the Small Business Act) address the ability of federal agencies to consolidate their requirements into bundled contracts. This legislation defines bundling of contract requirements as the consolidation of two or more requirements for goods or services that were previously purchased through separate smaller contracts⁴ into a single solicitation that is unlikely to be suit-

¹Quoted from the most recent version of the Small Business Act, amended August 17, 1999.

²See Romney (1998).

³Forming alliances with other provider firms (large or small) provides another opportunity for participation; however, we have been told that successfully creating and sustaining such teaming arrangements can be difficult and costly owing to transaction costs and coordination/management challenges. For example, see Romney (1998).

⁴A separate smaller contract is defined as a contract that was awarded to a small business or was suitable for such award (Sec. 412).

able for award to a small business.⁵ In particular, this legislation requires federal agencies to conduct market research to determine if consolidation is “necessary and justified” (Sec. 413), i.e., are the benefits, which are interpreted broadly to include cost savings and a variety of dimensions of performance improvements such as enhanced quality, “measurably substantial” relative to an unbundled baseline (Sec. 413). In addition, justification of a bundle based on pure administrative or personnel savings (e.g., fewer buyer staff to manage contracts) requires a different, potentially more strenuous, standard of proof. These benefits must be “substantial” in relationship to the value of the contract (Sec. 413). For worksopes considered to represent “substantial bundling” (Sec. 413), the federal agency must identify in the acquisition strategy the specific benefits from bundling, any barriers to participation by small businesses as prime contractors, and actions to maximize small business subcontracting opportunities. The agency must also include a determination that the specified benefits justify the use of a substantially bundled contract.

On July 26, 2000, the SBA issued a final rule outlining how the SBRA should be interpreted and implemented.

SBA’s Final Rule

The SBA’s final rule lays out a process by which agencies can seek approval for bundled solicitations and defines the key terms that were left undefined in the SBRA. It also describes the SBA’s right to appeal bundled acquisition strategies that it feels do not meet the legislation’s guidelines. We discuss the main points of this approval process, with an illustration (see Figure 3.1) and definitions of the key terms for this process. Appendix D more fully explains the SBA’s final rule.

Suppose a federal agency is considering a solicitation for one or more services. The first question the buying agency must answer is whether the SBRA justification guidelines apply to this solicitation.

⁵The bundle may be unsuitable for award to a small business because of one or more of the following reasons: the way the performance requirements are specified (e.g., diversity, size, or specialization), the total dollar value of the award, or geographic dispersion of sites where the services will take place (Sec. 412).

14 Federal Contract Bundling

RAND MR1224-3.1

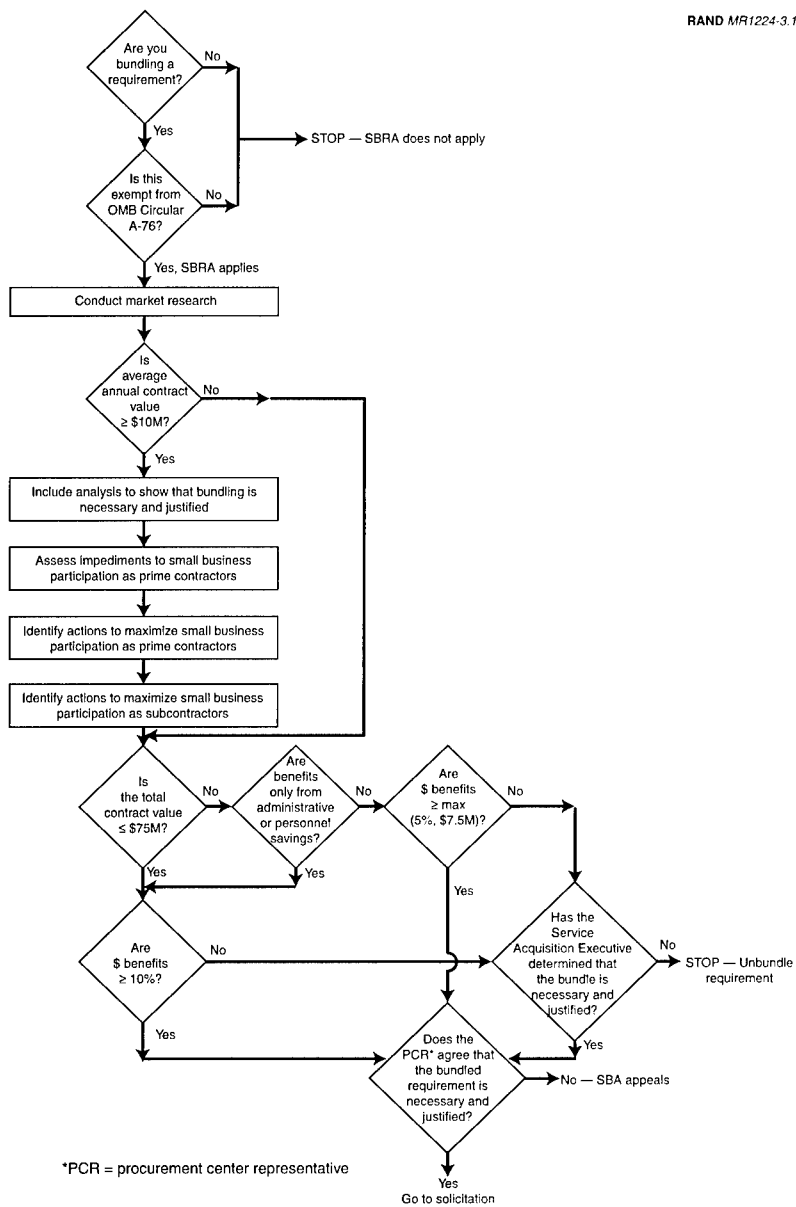


Figure 3.1—Bundling Justification Decision Tree

They apply if (1) the solicitation represents a bundled requirement (as defined above) and (2) the solicitation is for a recontracting activity. Solicitations conducted according to the rules of the OMB Circular A-76 are exempt.⁶

If the SBRA applies, the buying agency is required to conduct market research to determine whether the bundled requirement is necessary and justified.

A bundled requirement is considered to be necessary and justified if the cost and performance benefits associated with bundling are measurably substantial, relative to a baseline of separate smaller contracts. (The unbundled baseline for documenting benefits is the costs charged by small businesses for the pieces of the bundled workscope that they provide and, to the extent that they are available, the costs that could have been or could be charged by small businesses for the remaining portion of the workscope.) Performance benefits must be converted into dollar savings terms to count.⁷ If the total contract value (including options) is \$75 million or less, then benefits must equal at least 10 percent of the total contract value to be considered measurably substantial. If the total contract value (including options) is greater than \$75 million, benefits must equal at least 5 percent of the total contract value or \$7.5 million, whichever is greater, to be considered measurably substantial. When justifying a bundle based on only administrative or personnel cost savings, savings must equal at least 10 percent of the total contract value (including options), regardless of the contract size, to be considered measurably substantial.⁸

If market research shows the bundled requirement to be necessary and justified, the next question the buying agency must answer is

⁶The SBA's final rule asserts that if a group of activities is outsourced through the A-76 cost comparison process, the methodology will have ensured that the federal agency will derive "measurably substantial benefits" from the bundle.

⁷An interim rule, issued October 25, 1999, discusses a lack of comparability among the types of cost and performance benefits allowed by the SBRA. The requirement that all anticipated bundling benefits be expressed in terms of dollars is a way to address this. As an example, a reduction in cycle time associated with bundling must be converted to the value in dollars to the buying agency for that benefit to count.

⁸Note that benefits need only be quantified and monetized up to the appropriate threshold. A complete assessment of the levels of all benefits may not be necessary.

whether the requirement represents an *average annual* contract value of \$10 million or more.⁹ If so, this is a substantially bundled requirement. As a result, the acquisition strategy must be expanded to include (1) an analysis indicating that the bundle is necessary and justified, (2) an assessment of impediments to small business participation as prime contractors, (3) actions to maximize small business participation as prime contractors, and (4) actions to maximize small business participation as subcontractors.

If market research does not show that the bundled requirement is necessary and justified according to the benefit thresholds noted above, then the Service Acquisition Executive can determine that the bundle is necessary and justified when it is critical for the buying agency to meet its mission.¹⁰ If the Service Acquisition Executive is unwilling to make this determination, the buying agency must proceed with an unbundled acquisition strategy.

For a necessary and justified bundle (whether demonstrated through market research or determined by the Service Acquisition Executive), the last important question the buying agency must answer is whether the SBA's procurement center representative (PCR) agrees that the bundle is necessary and justified and, for a substantially bundled requirement, approves of the actions to promote small business participation as prime and subcontractors. If so, the agency can proceed to the solicitation. If not, the PCR can appeal the bundled acquisition strategy to the head of the contracting activity and then to the service secretary, if necessary.¹¹

⁹For example, suppose the workscope of a five-year contract with two option years is planned to expand each year, adding an additional \$1 million to the contract price annually. If the cost of the first year's workscope is \$5 million, then the total contract value over the seven years is \$56 million, and the average annual value is \$8 million.

¹⁰The Under Secretary of Defense for Acquisition and Technology can perform this function for other defense agencies, and the Deputy Secretary or equivalent can perform this function for civilian agencies.

¹¹A proposed bill, The Small Business Contract Equity Act of 2000 (H.R. 4890), would amend the bundling appeal process, giving decision authority to the Director of the Office of Management and Budget.

Competition in Contracting Act of 1984

Although our primary focus in this research is the SBRA, CICA, which seeks to maximize competition for federal contracts, may also limit the ability of federal agencies to bundle goods and services into large, integrated contracts. This legislation would apply if it is perceived that a bundled contract has limited the pool of bidders so that the requirements cannot be filled at the lowest possible cost.¹²

NEW SKILLS

As we have seen through related RAND research,¹³ organizations that have effectively implemented new PSM practices such as bundling and strategic supply-base reduction have made significant investments in new skills for the personnel executing these practices. In particular, conducting effective ongoing market research for specific classes of goods and services to understand the best sourcing practices plays a key role in bundling decisions. Although the Air Force is beginning to implement selected new PSM practices, it currently has little in-house expertise to understand (1) the sources of bundling benefits, which inform decisions about which services should be bundled into large contracts, and (2) how to measure the levels of benefits associated with bundling to demonstrate to the SBA that

¹²When the Air Force competed the Sacramento Air Logistics Center (ALC) workload in preparation for closure of McClellan Air Force Base, it bundled together KC-135 depot-level maintenance and modification activities, A-10 analytical condition inspections, paint, drop-in maintenance actions, and repair for commodities. Pemco Aero-plex Corporation, the firm that previously performed the KC-135 workload, chose not to participate in the competition due to its scope and protested the bundle to the General Accounting Office (GAO), asserting that the bundle violated CICA. The GAO agreed that the Air Force had not adequately justified the bundle, but the Air Force refused to unbundle the workload and recompile it. See GAO (1998) and Costa (January 1999 and May 1999). For a general discussion of CICA and bundling issues, see GAO (1999).

¹³Nancy Y. Moore, Laura H. Baldwin, Frank Camm, and Cynthia Cook discussed the challenges commercial buyers have faced in increasing the skills of their purchasing personnel, how they have addressed these challenges, and implications for the Air Force in a 1999 briefing, "Implementing Best Purchasing and Supply Management Practices: Lessons from Innovative Commercial Firms."

these benefits exceed the threshold established by the SBA in its final rule as a result of the SBRA.¹⁴

¹⁴In the context of public/private competitions conducted under the OMB Circular A-76 rules, Air Force personnel have expressed concerns that functional personnel may not have the experience/skills needed to construct statements of work for bundled studies. This can be especially difficult if those personnel are participating in study teams on a part-time basis, with little reduction in their “normal” duties. In addition, the government-employed civilians charged with the responsibility of creating the in-house bid, called the Most Efficient Organization (MEO), for a bundle of services may lack the skills needed to reorganize the provision of bundled services more efficiently across traditional organizational boundaries. Because the MEO is much less likely to successfully compete against external providers without such a reorganization of the bundled workload, the Air Force also faces internal resistance to bundled A-76 studies.

BUNDLING DECISIONS

The potential *types and sources of benefits* of bundled service contracts, compared with a baseline of many small contracts, are widely understood by the commercial providers that we interviewed.¹ Each of these organizations was able to provide specific illustrations of the benefits. In addition, many of these benefits are validated in the academic and trade literature. In the next chapter, we discuss the potential types and sources of bundling benefits.

We were unable to find information about *methodologies* used to make bundling decisions for services in the academic or trade literature.² Further, the commercial buyers of bundled services that we spoke with did not have a standard methodology for making

¹Commercial providers were able to give us comprehensive information about bundling benefits during our interviews. In fact, several gave us information that they include in their Request for Information (RFI) responses to educate potential buyers about bundling. The commercial buyers and Air Force study teams (with one exception) that we spoke with did not appear to have performed a comprehensive analysis of bundling benefits prior to our visits. However, during our interviews, they described (without being prompted) many of the same benefits we had learned about from the commercial providers.

²Van Buer et al. (1997) proposes a linear-programming model to help buyers make bundling decisions for standard, commodity-like products. However, most of the literature on bundling decisions focuses on how *suppliers* decide to bundle products that they sell (e.g., copiers, supplies, and maintenance services) and optimal methods for pricing these bundles. See, for example, Hanson and Martin (1990), Lawless (1991), Sadrian and Yoon (1992), Yadav and Monroe (1993), Harlem et al. (1995), Yadav (1995), and Lyons (1998).

bundling decisions for services. These decisions appear to have been made in either an ad hoc or piecemeal manner.³ One buyer told us that its chief financial officer suggested examining the possibility of bundling its numerous facility management service contracts into larger contracts with fewer firms. The buyer then proceeded to investigate bundling options with limited market research (mostly phone calls). After deciding to bundle these services for one small part of its facilities with a particular provider, this buyer became convinced that it would benefit from expanding the scope of the bundle to include all of its facilities.⁴ Another buyer that primarily provided its facility management services using in-house personnel was directed to examine the possibility of outsourcing by its senior management when the firm faced a financial crisis. The decision to bundle services into a few large contracts arose out of the necessity of outsourcing on a tight time schedule. At the other extreme, a provider described one buyer's strategy as a "Pac-Man" approach to bundling.⁵ This buyer began by outsourcing a small group of services to the provider. As the provider demonstrated successful provision of services, the buyer incrementally added services to the provider's contract.

In fact, all of the service providers that we interviewed noted that most of their buyers originally approached the services bundling decision in a limited way. Until recently, outsourcing decisions were not recognized as being related to the strategic concerns of the buyer organization; thus, outsourcing and bundling decisions were largely made at the tactical level by individual functional or organizational groups, with bundles that were no larger (and often smaller) than the

³Unlike the Air Force, commercial firms typically infrequently make decisions about bundling services; therefore, they find it difficult to justify the resources to develop such a general approach. In fact, some buyers hire outside consultants knowledgeable in the best outsourcing practices (bundling and otherwise) for the specific services being considered.

⁴A buyer in a similar situation with many small contracts for its facility management services examined bundling as a solution to its financial difficulties. It expanded the scope of the bundle it initially considered based on information gathered during site visits to customers of potential providers.

⁵Pac-Man is a video game that was popular in the late 1970s through early 1980s; the players gobble-up one electronic dot after another.

services controlled by any individual group.⁶ The provider of logistics services that we interviewed told us that one of its buyers that previously segregated its third-party logistics service contracts by product line recently consolidated these services across product lines as a result of bringing in a new senior vice president of logistics who has responsibility for making strategic decisions that encompass all of its logistics functions. All of the service providers also told us that their more innovative existing buyers are expanding the workscope of their bundled contracts to cut across functional or organizational boundaries.⁷ One provider told us that 15 percent of its new business is attributed to existing buyers that are expanding their contracts, while another attributes 80 percent of its recent growth to expansion of its business with existing clients.⁸

When deciding about a potential shift to one or more large bundles or an expansion of an existing service contract, each buyer looks for evidence of the benefits of the new bundled strategy. Buyers tailor their choices of bundles to the types of services involved and the corporate goals that the services will support.⁹ For example, when a buyer's business strategy or culture leads to the need for local control or a great deal of customization of particular services by location or business units, those services are generally not well suited for bun-

⁶In addition, many providers were not large enough or sophisticated enough at that time to provide good service on a large scale across many diverse services nor was information technology good enough to allow the degree of monitoring and coordination needed to provide good performance across integrated services.

⁷Some Air Force bundles, such as the multiple support function bundles associated with the Air Education and Training Command's Pick-a-Base activities and Vance Air Force Base, are much larger than the typical bundled service contracts found in the commercial sector. The umbrella base operations and maintenance contract at Vance Air Force Base includes such diverse services as aircraft maintenance, childcare, and installation support.

⁸Surprisingly, this expansion of bundles is happening at a fairly slow rate in the commercial sector overall. The same provider that attributes 80 percent of its growth to expansion of business with existing clients also told us that 85 percent of its current clients still purchase services in "mini-bundles" of fairly closely related services, i.e., transaction management, project management, or facility management services. So the expansion of business is often due to growth in the scope of services within these mini-bundles. For example, one buyer expanded the scope of its facilities call center to include additional corporate facilities.

⁹Moore et al. describe the tailoring process and the tradeoffs associated with different bundling strategies in an internal 1997 RAND memorandum. Please contact Nancy Moore at (310) 393-0411 or Nancy_Moore@rand.org for more information.

dles across sites or units. In contrast, the need for standardization of certain services across locations favors bundling across sites. Similarly, individual services that are related to a single end-to-end process are well suited for bundling across services because of the potential for aligning management and incentives and for reducing transaction costs at each boundary.¹⁰

Some firms are satisfied making these decisions based on logical arguments of benefits; others require quantification of the levels of potential savings or performance improvements. One buyer told us that its standard of evidence required to make scope expansion decisions varies with the magnitude of the expansion and the number of other internal organizations or employees affected by the decision. For small-scale expansions that involve services that fall within a single internal function (e.g., property management), this buyer may be satisfied with logical arguments about sources of benefits from consolidating the additional services into an existing contract. However, for large expansions that cross organizational boundaries, this buyer wants credible evidence of the levels of expected benefits, in addition to the intuition behind them. This evidence is necessary to convince the stakeholders in the other organizations that the consolidation is in the best interest of the firm and that the transition costs associated with the change are worthwhile.

Although, as mentioned above, there is a gathering consensus about the potential types and sources of benefits available through a few large, rather than numerous small, service contracts, there does not appear to be any consensus about the *general* levels of those benefits. Commercial providers and buyers were able to provide information about levels of savings that individual buyer firms have experienced; however, the ranges of these savings were quite large. No examples of the levels of performance improvements associated with bundling were offered.¹¹

Based on the anecdotal evidence offered by the buyers and providers that we interviewed, buyers of facility management (FM) and logis-

¹⁰See Boyson et al. (1999) and Ernst & Young and the University of Tennessee (1999).

¹¹Ernst & Young and the University of Tennessee (1999) provide examples of how logistics performance can vary depending on the number of nodes in the distribution pipeline.

tics services appear to save between 10 and 30 percent in direct contract costs (not including any associated administrative savings that the buyer experiences) when they transition from small, unbundled service contracts to large bundles that are tailored to the buyers' needs.¹² (See Table 4.1 for a summary of these reported savings.) Much of the available evidence is from examples in which multiple contracts for the same services provided by one or more firms are consolidated into a single or a few contracts with one or a few providers. For example, one buyer recently reduced the number of janitorial firms that it deals with from 50 to 3 (one large and two small firms) and saved between 10 and 15 percent in direct contract costs. Another buyer that used 67 janitorial firms in five states added this service to its facility management bundle; as a result, the provider reduced the number of janitorial firms to 6, which led to more than 30 percent savings in direct contract costs to the buyer.

Other examples illustrate savings from consolidation of contracts for different kinds of related services. One buyer that was purchasing

Table 4.1
Ranges of Savings Reported by Commercial Firms Implementing Bundled Contracts

Buyer	Bundling Action	Estimated Savings (%) (Direct Contract Costs)
A	Reduced janitorial providers from 50 to 3	10–15
B	Added janitorial to FM bundle; reduced janitorial providers from 67 to 6	30
C	Consolidated 5 different functional service areas	15
D	Bundled 85 separate contracts for FM services	15–20
E	Consolidated 15–20 separate service contracts	30
F	Expanded existing bundle	20–30 of provider's fee

¹²It is reasonable to assume that the examples offered during our interviews with the selected innovative firms might represent some of the best, or most optimistic, examples of bundling benefits received by buyers. (See Appendix A for a description of our firm selection methodology.) In addition, it was difficult for us to rule out for certain the possibility that other changes in acquisition strategy occurred simultaneously, contributing to the reported savings.

services that fell within five different functional areas asked potential providers for bids for a bundle that included all five service areas as well as bids for each of the single-service areas. One of the providers we interviewed submitted bids for this work; its bid for the bundle was about 15 percent lower than the sum of its bids for the five individual service areas. One buyer saved 15 to 20 percent in direct contract costs by consolidating 85 separate contracts for a variety of facility management services such as elevator maintenance and custodial services into a single bundle with one prime provider and nine subcontractors. Another buyer consolidated 15 to 20 service contracts into a bundle with a single provider and saved 30 percent annually in direct contract costs. One provider reduced its fee for the current workload by 20 to 30 percent for a buyer that expanded the bundle it had purchased.

We also found one example of savings from contract bundling within the DoD. The Air Force's Air Combat Command substantially reduced its total annual costs associated with operations, maintenance, and support of the Tethered Aerostat Radar System (TARS) for drug interdiction by bundling separate contracts for these services across sites.¹³

Providers assert that part of the difficulty in generalizing levels of bundling benefits can be attributed to the fact that the magnitude of benefits depends upon a number of factors that can vary widely across buyer firms. Perhaps the most obvious factor is the differences in the composition of bundles across buyers. Some buyers have been more aggressive than others about expanding the scope of contracts across sites and services. The more aggressive strategies are believed to generally result in greater savings and performance benefits; although, as we discuss below, some bundles can be too large. Similarly, benefits may depend on the other dimensions of the acquisition strategy chosen.¹⁴ For example, a process-based ("how-

¹³See Moore et al. (1999). The initial bundling resulted in 50 percent savings in total annual costs for this system. In addition, by reinvesting in equipment, partnering with its provider to standardize operations, and sharing savings with its provider, Air Combat Command was able to reduce TARS costs by an additional 25 percent.

¹⁴Dimensions of an acquisition strategy include the market research plan, bundle, proposed statement of work, source selection criteria, transition plan, contract type, incentives structure, performance metrics, and performance management plan.

to”) statement of work for a bundled contract can limit the provider’s ability to put in place innovations that create some types of bundling benefits. Other factors concern differences in the methods of acquiring services prior to bundling. One provider told us that bundling benefits should be greater the larger the number of small contracts previously used to purchase the services and the longer those particular contracts have been in place.¹⁵

In addition, innovative buyers often have dynamic bundles that grow and change over time as buyers’ organizations grow or needs change. Two buyers that we spoke with had experienced large changes in their bundles through mergers during the past few years. In one case, additional sites and services were added while at least one service was removed from the bundle (the acquiring firm had not previously outsourced this service and chose not to adopt the acquired firm’s bundling strategy). These buyers indicated that the dynamic nature of their bundles makes it difficult to track and quantify benefits over time.¹⁶

Finally, generalizing levels of bundling benefits is made difficult by the lack of comprehensive information about some buyers’ costs and performance prior to implementing bundled service contract strategies, i.e., the unbundled baselines. This applies to buyers that bundled as part of an original outsourcing activity as well as those that had already outsourced these services through many small contracts.¹⁷

When meeting with a prospective buyer about purchasing a bundle of services or an existing buyer about expanding the scope of its contract, providers use proprietary “models” based on benchmarking studies of their existing sites to estimate the resources they would need to provide the desired levels of performance for that buyer’s

Moore et al. describe these dimensions of the acquisition strategy in the context of facility management contracts in a 1997 RAND internal memorandum.

¹⁵Benefits may also be greater for outsourcing versus recontracting if the buyer has relatively less ability to control an internal workforce.

¹⁶In another 1997 RAND internal memorandum, Moore et al. provide more details about the dynamic nature of bundles.

¹⁷One firm told us that one of its primary reasons for bundling was to get access to large firms that have good information systems that can accurately track costs and performance.

facilities. They then compare that estimate to the best information available about the buyer's current cost and performance.¹⁸ Thus, providers *can* estimate achievable bundling benefits, but only on a case-by-case basis, after expending considerable resources.

SMALL BUSINESS PARTICIPATION IN BUNDLES

Although we focused on bundling issues from the buyer's perspective, small business concerns are at the heart of the important policy questions on contract bundling. Therefore, when opportunities arose during our interviews with commercial buyers and providers of bundled services, we asked how, if at all, small businesses participate in bundled contracts. In addition, during our interviews with small business advocacy organizations, we sought information about how small businesses may be affected by bundled contracts. The discussion in this section is not meant to be conclusive but rather to suggest opportunities for further investigation.

Through our interviews with commercial buyers and providers as well as our review of the purchasing literature, we learned that many commercial buyers value small business participation in their purchases. For example, some buyers have corporate goals that encourage shaping their supply bases to mirror their customer bases in demographics or geography. Other buyers in highly regulated industries or that supply goods or services to the federal government have small business purchasing goals that they must meet. During the sourcing process, these buyers convey their desires for their providers to create opportunities for small businesses to participate in their bundled service contracts. However, providers indicated that most buyers do not include formal goals for small business participation in their contracts. In these cases, providers generally do not track their subcontracts with small businesses for formal reporting purposes.

¹⁸As mentioned above, commercial buyers often do not have dependable information about current costs and performance. This is especially problematic for the Air Force and DoD more broadly. Financial management data systems focus on budget execution rather than actual costs, with an emphasis on functional organizations rather than service outputs. See Booth (2000). In addition, this focus on processes rather than service outputs means that few of the needed performance data currently are collected.

Other buyers (often those that have formal small business purchasing goals themselves) do give their providers of bundled services explicit goals for small business participation.¹⁹ In these cases, providers carefully track small business participation in those bundles and convey this information through formal reports to the buyers. Although we were not able to learn the details, these buyers seem to be able to count subcontracts held by their providers toward their own corporate small business goals.²⁰

Generally, buyers allow their providers of bundled services to choose which services to subcontract to small businesses and pick the small businesses and contract structures that will best meet the buyers' needs. The providers that we interviewed have diversification and mentoring programs that they can draw on to select the services and corresponding small business providers that will lead to the best performance and cost outcomes for their buyers.

Several of the large providers that we spoke with seek ways to expand their business with their best small business subcontractors, including them in new business opportunities when possible. In addition, the one small business that we spoke with (it is participating in an alliance with large firms) told us that it is anticipating further business opportunities through its partnership relationship with the other firms.

During our interviews with the SBA and SAF/SB, we heard of several concerns small businesses have about working with large providers as subcontractors as part of bundled contracts rather than directly with the federal buying organizations as prime contractors. These include the perception that subcontractors have restricted or more expensive access to capital, lower profits, or access to only the "menial" aspects of workscopes. However, we aren't aware of any research confirming or refuting these concerns. In addition, we were told that small businesses worry about large providers luring away

¹⁹Some firms have goals that target particular types of small businesses, e.g., minority-owned firms.

²⁰We did hear about a few buyers that chose to retain their prime contracts with small businesses even though they were moving toward bundled services. These firms asked their providers of the bundled services to manage the small business contracts. We do not know why these firms chose this strategy rather than "taking credit" for their providers' subcontracts with small businesses.

their key employees with specialized knowledge that is difficult to replicate. However, several large providers that we interviewed told us (without us bringing it up in the conversation) that they have formal agreements with many of the small businesses that they work with that preclude them from hiring key personnel from the small businesses without permission.

POTENTIAL BENEFITS AND RISKS ASSOCIATED WITH BUNDLED SERVICE CONTRACTS

In this chapter, we describe a variety of potential benefits and risks associated with bundled service contracts, based on our interviews with buyers and providers of bundled facility management and logistics services as well as our literature review. All of these benefits and risks will not be applicable in every case. They may be more or less important given the types of services purchased, the other dimensions of the selected acquisition strategy, and the goals of the buyer that the acquisition strategy supports.

COST SAVINGS

The most common source of savings associated with bundled service contracts is the use of fewer personnel, made possible by many different factors:

- Buyers that bundle related services are able to reduce the number of personnel needed to provide those services through the use of multi-skilled, or cross-trained, technicians who can perform other jobs when their primary specialties are not needed. For example, a buyer with a separate contract for electrical repair services may require an electrician for only 30 hours a week, yet must pay for a full-time staff member. If those electrical services are included in a bundled contract with nonspecialty services such as painting, that electrician can be cross-trained to perform other types of activities when his/her specialty is not needed,

reducing the total staff required to provide the entire group of services.

- When buyers bundle multiple services at a site rather than contract for them separately, the provider can perform those services using fewer personnel because it needs a smaller pool of “filler,” or backup, staff during work breaks, vacations, or sick days. If a buyer contracts for receptionists separately, the provider must employ enough people to fill each receptionist position full time, everyday. However, when a provider controls receptionist services in addition to other services such as the facilities call center, the provider can maintain a much smaller pool of staff to fill vacancies across all of the included services when employees are away from their jobs.
- A provider can manage a group of related services within a bundled contract with a smaller total management staff than would be needed for separate management of those services through many small contracts. For example, the person who manages building maintenance activities, such as plumbing services, can also manage other services, such as janitorial.
- When a provider controls all of the services related to a single activity, it may have opportunities to reduce the total staff required for the activity by introducing process improvements, particularly those that reduce internal/external transaction costs. Such improvements may be facilitated by management information systems or alignment of the management of related services.¹ For example, one buyer of third-party logistics services initially purchased portions of inbound logistics services (from an overseas supplier to the buyer’s manufacturing site) from separate providers. One provider loaded the parts at the U.S. port, brought them from the port to a warehouse, and unloaded them there; another provider managed the warehouse; and a third provider loaded the parts from that warehouse and took them to the buyer’s manufacturing site. By consolidating the inbound logistics services and using an integrated tracking system, a sin-

¹Monczka et al. (1993) note that volume purchases of commodities (with longer-term agreements) can lead to opportunities for investments that improve productivity.

gle provider was able to bring the parts from the port to the manufacturing site with fewer labor hours.²

- When a buyer regionalizes provision of similar or identical services that were performed across many locations, the provider can often perform the regionalized services with fewer people because of personnel efficiencies. An example of this might be consolidation of facilities call centers.³ Some efficiencies may be related to a smaller requirement for filler staff, as discussed above. Also, individual employees may be more productive through increased opportunities to share better ways of accomplishing services.
- As buyers shift to larger, more comprehensive contracts, providers can reduce the personnel in contract management, accounts receivable, and other activities associated with transacting with buyers (which are generally included in overhead costs paid by buyers).
- Similarly, buyers can reduce the personnel that set up and manage contracts and pay invoices.⁴ For example, one buyer consolidated its 2500 pest control contracts to a bundled contract with a single provider, dramatically reducing the number of invoices that had to be processed each month.⁵

²The provider also helped reduce needed pipeline inventory by almost 40 percent through quicker, more reliable delivery. See Boyson et al. (1999) and Ernst & Young and the University of Tennessee (1999) for discussions of costs associated with supply chain activities when activities are bundled versus separated.

³Another example relevant to the Air Force is consolidation of repair services for certain types of aircraft components.

⁴One provider told us that savings associated with the reduced need for buyer contract management personnel can be as great or greater than other types of savings associated with bundling. With the help of a good performance management plan [see Baldwin et al. (1999)], several buyers indicated that they manage very large bundled service contracts with only one to three in-house personnel. See, for example, Sadrian and Yoon (1992) and Monczka et al. (1993). Lawless (1991) also notes that an advantage of purchasing multiple related commodities through bundled contracts with a known supplier is the avoidance of time spent searching for other reliable suppliers.

⁵See Appendix B. Chrysler reduced its number of buyers by 30 percent by reducing the number of overall suppliers and eliminating the competitive bidding system (Dyer, 1996).

The use of fewer personnel is not the only potential source of savings. Additional sources are described below.

- Bundled contracts that include the responsibility for purchasing service inputs [materials or other services needed to provide the services in the bundle, e.g., cleaning supplies or HVAC (heating, ventilation, air conditioning) filters for facility management services or transportation for third-party logistics services] may lead to better purchasing power for the provider.⁶ This in turn can lower total costs for the buyer.
- Buyers that choose to use a bundled service contract can use their increased leverage or market power with the provider associated with the larger workload to negotiate a lower profit margin for the provider.⁷ As noted in Table 4.1, one buyer experienced significant savings in the fee it pays its provider by leveraging an expansion in the bundle of services purchased.
- Buyers may benefit through more efficient use of capital equipment if the services included in bundled contracts can share equipment (e.g., similar services provided at several locations that are fairly close to one another). A provider told us that one of its buyers used to contract separately for individual construction projects. One day, two cranes arrived to perform two jobs the same day. If those construction projects had been bundled into a single contract with one provider, the provider could have used one crane that day to accomplish both tasks. Similarly, for logistics transportation services, consolidation of inbound shipments allows more efficient use of trucks, leading to lower transportation rates.⁸
- Similarly, by regionalizing or consolidating services that were provided at many different locations (e.g., through consolidation

⁶See Franklin (1998) for a discussion of how real estate and property management service providers are leveraging their purchases of goods and services to create savings that can be passed through to their buyers.

⁷We inferred from our discussions with providers that the total profit can be more important than the profit margin for the bundle. Sadrian and Yoon (1992) discuss increased buyer leverage resulting from higher-volume purchases of manufactured commodities.

⁸See Flynn (1993).

of repair services, warehouses, or distribution centers), buyers can save money through more efficient use of facilities.

- Buyers can avoid paying some duplicate overhead expenses by shifting from many small contracts with multiple providers to a single contract with one provider. Examples of such overhead expenses include workers' compensation insurance policies, pager and cellular phone rental charges for technicians (rates are better for larger quantities), company letterhead, and business cards (there are fixed set-up costs associated with the company name).
- When buyers use multiple providers for separate or small groups or services, they are paying to use many different management information systems (MIS) to track financial and performance data. To the extent these systems need to interact to provide information to the buyer, the buyer also pays for integrating systems and reconciling information. This is especially true for financial data that need to be tracked in a consistent format across all purchased services. These information-related expenses can be reduced and in some cases eliminated by shifting to a bundled contract with a single provider with a good MIS capability.

PERFORMANCE IMPROVEMENTS

Providers of bundled services can increase performance for their buyers (i.e., improve quality, responsiveness, flexibility) in a variety of ways.

- Alignment of all services related to a specific activity through a bundled contract can lead to improved provider accountability and coordination of these services, which in turn can lead to increased provider responsiveness and flexibility.⁹ For example, when a toilet overflows, (1) the janitorial staff is needed to clean up the water, (2) plumbers are needed to fix the underlying problem, and (3) building maintenance and/or groundskeeping staff potentially are needed to help the plumbers access hidden or buried pipes. If these services are provided through separate

⁹Lawless (1991) notes that this is also relevant to commodity bundles that include integrated products.

contracts, the buyer must coordinate all efforts or run the risk of a bad outcome. Mishandling of the problem can lead to finger-pointing on the part of the different providers and potentially more costly repair work, such as unnecessary damage to landscaping while accessing buried pipes. However, if these services are included in a single contract, the provider is responsible for bringing together all necessary resources to fix the problem and for coordinating the efforts to minimize expenditures and disruptions for the buyer.¹⁰ Similarly, when a buyer shifts from using multiple carriers and freight forwarders for shipments to an integrated carrier (like FedEx or the United Parcel Service), the integrated carrier is responsible for the entire shipping process. Thus, the buyer has one number, rather than several, to call if a shipment is late or damaged en route.¹¹

- Alignment of related services for a single activity through a bundled contract also allows for better performance-measurement opportunities (e.g., through integrated MIS and better data integrity).¹² These integrated data in turn can help the provider improve the processes underlying the activity and thus improve performance for the buyer. For example, leading providers of integrated facility management services use call centers to capture comprehensive information about facilities problems and the activities needed to fix these problems and perform preventive maintenance (e.g., frequency, time, materials cost).¹³ For consolidated third-party transportation services, the state-of-the-art data systems are beginning to allow an integrated provider to track material in transit so that (1) it can be quickly rerouted if necessary to avoid problems and (2) plans can be made by the buyer to quickly use the material (i.e., the buyer can time repair or manufacturing activities based on the arrival of the material).

¹⁰See Alchian and Demsetz (1972) for a discussion of the team production problem. Unfortunately, the benefits associated with addressing such problems through bundling could be difficult to quantify or predict with any precision *ex ante*.

¹¹See the discussion of multi-node versus direct-distribution pipelines in Ernst & Young and the University of Tennessee (1999).

¹²This also gives the buyer greater confidence in the provider's performance.

¹³See Baldwin et al. (1999) for a discussion of call centers.

- Buyers can use the fact that bundled contracts allow providers increased control over performance outputs to convince providers to tie more of their fees to levels of performance. Generally, the more control a provider has over processes associated with an activity, the more willing it will be to put a larger portion of its fee at risk based on the performance output for that activity. Tying fee to performance is a strong incentive for the provider to meet buyer needs. As an example, one facility management provider told us that if it does not control the main services that affect customer satisfaction, including such services as janitorial and grounds maintenance, it is much less willing to tie a significant portion of its fee to customer satisfaction ratings.¹⁴
- Similarly, buyers and providers are better able to align the performance of services with the overarching goals of the buyer organization through the use of bundled contracts, rather than many separate contracts covering subparts of single activities. If the goal of a buyer is to increase employee participation in on-site food services, it may be easier to align the incentives of a single provider that is responsible for maintaining the food service facilities and grounds and preparing and serving the food than to align the incentives of several providers each in charge of one of the individual pieces.
- Buyers that purchase similar or identical services for many sites through separate contracts with many different providers often find it difficult and costly from their perspectives to achieve consistent service levels across sites.¹⁵ However, by shifting to one or a few bundled service contracts, buyers can leverage provider capabilities and existing data systems to achieve consistency of service levels across the whole workload, guaranteeing service-level standards are met and unreasonable service requests are reduced. One of the buyers we interviewed has offices in many locations. Originally, the buyer had separate landscaping con-

¹⁴As the Air Force experiments with using performance incentives for its aircraft heavy maintenance services, providers may be less willing to tie their compensation to performance measures such as on-time delivery if they do not control important pieces of the process such as supply of spare parts and subcomponents.

¹⁵The buyer has to invest in personnel and data systems to track and manage service levels across separate contracts. In practice, such funds are rarely forthcoming for noncore activities such as facility management services.

tracts for individual sites. Because office managers at the different locations had very different expectations about required landscaping services—ranging from what headquarters viewed as unreasonably high to unacceptably low (conveying an inappropriate image)—grounds appearance varied significantly from location to location. After bundling its facility management services across these locations, the buyer created landscaping appearance standards and turned over management and enforcement of these standards to the provider.

- Buyers that purchase multiple services at a single site through a bundled service contract (rather than many small contracts with separate providers) benefit from the greater flexibility of the provider to quickly shift resources among services to meet emerging or emergency buyer needs. One buyer told us that during the threat of a flood, its provider called in all staff to fill sandbags to place around the buyer's facilities. Without a single bundled contract, buyer personnel would have had to coordinate this effort across personnel employed by many different providers.¹⁶
- Bundled service contracts give buyers greater leverage with their providers to negotiate customized services or possibly higher performance levels without incurring the usual costs. For example, buyers may be able to request tailored performance reports (or even a slight scope or scale expansion) at no additional cost. One buyer bundled all of its elevator maintenance into one contract and negotiated an on-site maintenance person for each location with 50 or more elevators at no additional cost.
- Bundled service contracts can lead to a reduction in personnel turmoil, leading to improved performance for the buyer. When a buyer purchases services through multiple small contracts, a subset of those are always being competed, leading to potential incremental on-site provider personnel transitions.
- Bundled service contracts can lead to reduced personnel turnover through expanded career opportunities, which can lead

¹⁶In addition, large providers (that may be interested only in larger, bundled service contracts) often have the capability to pull resources from other sites (i.e., surge) to help a buyer during a crisis.

to higher performance for the buyer. When a provider controls many diverse, but related, services, employees have opportunities to cross-train and move from one service area to another (e.g., from central heating plant maintenance into engineering). This can create higher job satisfaction.¹⁷

RISKS

Larger bundles are not always better from the buyer's perspective. Bundling is subject to the same diseconomies inherent in any organization; larger organizations involve more layers of management, less direct communication among decisionmakers, and more opportunities for divergent interests to emerge and dilute a single, unified vision in the organization. Any effort to bundle must offer benefits, like those above, that are large enough to offset these generic and ever-present diseconomies of size. When a buyer bundles activities that do not generate the kinds of economies discussed above, generic diseconomies of scale can easily yield increased cost or decreased performance.¹⁸

¹⁷In addition, to the extent that larger providers are interested in bidding only on larger bundled contracts, bundling can lead to reduced personnel turnover through the more comprehensive benefits packages (e.g., medical and retirement) that larger firms are generally able to offer their employees. A recent survey conducted by Dun & Bradstreet found that 81 percent of small businesses offered no retirement benefits, 64 percent offered no paid sick days, 61 percent offered no health benefits, 54 percent offered no paid holidays, and 50 percent offered no paid vacation days (Gregory, 1998).

¹⁸Another potential drawback to bundling is the competitive "lock-in" effect that comes from committing a greater degree of control over key services to a single service provider. Bundling may increase the level of effort a buyer must expend to disentangle itself from an existing relationship with a provider (without adversely affecting operations) if the provider does not meet the buyer's needs. These increased switching costs potentially erode the buyer's ability to manage performance as desired. To avoid this "lock-in" effect, a buyer can give at least a small part of its work to one or more additional service providers. This may convey to the primary provider that it should not take its position for granted.

We are grateful to William Kovacic for the following illustration. Twenty years ago, it was common for large commercial enterprises to bundle legal services, relying on a single large law firm to handle most of their counseling and litigation needs. Today, major companies still may give a large amount of work to one law firm, but they often spread the business around more than they did in the past. Increasingly, they hold auctions to obtain legal counsel for specific projects, or they diversify the range of law firms retained to perform specific tasks.

For example, when bundles become so large that they exceed the core capabilities or capacities of potential providers, buyers run the risk of receiving poor performance or incurring an unnecessarily high cost for some activities in the bundles.¹⁹ Bundles can include such a broad set of services that many leading providers are unable or unwilling to bid (e.g., facility management services plus aircraft maintenance or information technology services), limiting buyers' abilities to realize the performance and savings benefits expected from bundling. Similarly, buyers that bundle services across too broad a geographic area may find that it is difficult to find firms that can absorb the workload and provide consistently good service across the entire area. As discussed above, the magnitude of this risk varies by service, buyer goals, and acquisition strategy. For example, many leading facility management providers use the same elevator maintenance service subcontractor at each of their buyers' sites. However, several providers told us that they have difficulty finding a similarly consistent national provider of janitorial or grounds-keeping services. These large providers tend to subcontract locally or regionally for these services.²⁰

Several buyers that we interviewed are concerned about this risk and have taken deliberate steps to mitigate it. For example, they have separate bundles for closely related groups of services that fall within the bounds of typical core capabilities of the leading providers; they have chosen individual providers for services within distinct geographic regions (e.g., regionalization of property management services);²¹ and they have segregated third-party logistics services by product lines or manufacturing plants. Other buyers have pursued large, comprehensive bundles by encouraging (sometimes almost dictating) the formation of strategic alliances among providers that

¹⁹The British Ministry of Defense, which previously contracted for very large diverse bundles of services, is now backing away from its comprehensive installation bundles, separating facility management services from aircraft support and airfield operations.

²⁰Moore et al. gave additional examples and a more detailed discussion of the risks associated with different bundling strategies in a 1997 briefing.

²¹However, one buyer we interviewed that has several regional facility management contracts is planning to reduce the number of providers with whom it works. One advantage of the regionalization approach is that it provides an opportunity to benchmark the cost and performance of similar services across providers, creating a fairly competitive environment that encourages innovation and continuous improvement among the providers.

were specifically chosen because of their capabilities to provide certain pieces of the bundled services. However, such alliances can be difficult to set up and sustain over time. They generally require a lot of work on the part of the buyer and providers (who may be competitors in some activities or regions), potentially offsetting some of the benefits associated with the larger bundle.

BUNDLING METHODOLOGY FOR RECONTRACTING ACTIVITIES

TACTICAL METHODOLOGY

The Air Force has many performance improvement and savings initiatives ongoing and planned for the near future. Some of these are recontracting initiatives.¹ To be able to take advantage of the potential benefits available through contract bundling, the Air Force needs a bundling methodology that it can implement immediately. In this section, we outline such a “tactical” (or short-run) methodology the Air Force could use in each of its current and upcoming initiatives to (1) determine whether a bundled acquisition strategy supports Air Force goals and, if so, (2) demonstrate that the bundled strategy is necessary and justified in light of the cost/benefit test described in the SBRA of 1997 (as defined by the SBA in its final rule). First, we describe the recommended approach, the primary element of which is a Request for Information (RFI) from providers of services that might potentially be included in any chosen bundle(s). Then, we outline a template structure for the RFI. Finally, we conclude with the new responsibilities the Air Force would need to accept to successfully execute this approach.

¹The Air Force currently seems to be focusing on A-76 studies rather than on recontracting activities. However, we believe that recontracting activities offer an equal or greater potential for performance improvements and savings.

Approach

Our approach reflects the regulatory character of the rule that is being used to implement the SBRA. We propose a process that a regulatory agency might use to gather data to inform a proposed regulatory action, but we structure the data collection so that the Air Force controls how the data collected are used. In particular, our approach seeks to gather data on alternative bundles that the Air Force can use to (1) choose the best bundle(s) for the activities under review and then (2) give the SBA conclusive evidence that the bundle(s) chosen is/are necessary and justified.² Otherwise, as discussed earlier, the SBA has the authority to appeal the decision up the Air Force chain of command, leading to extra effort and potentially costly delays.

At the heart of the proposed bundling methodology is an RFI from relevant providers of the services under review for potential bundling. The Air Force devises a carefully structured RFI and uses it to gather the information it needs to make its bundling decision and justify it to the SBA. Such an approach offers the following advantages:³

- It reveals who really cares about this particular bundling decision outside the Air Force and hence who might demand SBA action. The RFI also reveals the nature of their interests. By inviting all interested parties to provide information early, the Air Force has an opportunity to build a case against any later intervention to stop an Air Force decision (or to take proactive steps to mitigate any concerns of interested parties).
- By inviting anyone with an interest in a case to provide input, the RFI provides a relatively easy, quick way to bring together information relevant to the Air Force's deliberations. This allows the Air Force to tap knowledgeable sources of information and limit the scarce Air Force resources it commits to the analysis.

²If the evidence of bundling benefits does not meet the criteria needed to show that the bundle is necessary and justified, then perhaps it can be used to demonstrate to SAF/AQ that the bundle is necessary to the buyer organization's mission.

³A general benefit of the RFI approach is that it leads to early awareness in the industry about upcoming acquisition initiatives so that providers can better plan their proposal activities and begin discussions with buying organizations.

- An RFI is inherently externally oriented. The proposed process is likely to (1) yield relevant information that the Air Force cannot easily generate itself and (2) keep the Air Force continuously focused on the best opportunities external to itself as they develop over time.
- Any respondent claiming benefits from bundling that lead to a bundling decision that does not yield the benefits advertised creates a record that the Air Force can retain, monitor, and consider in its use of information from this respondent in future RFIs. This also applies if the claims about bundling are negative.
- A properly structured RFI meets the government's requirements for openness, fairness, and a formal process in a politically sensitive setting, while protecting sensitive, propriety data. The RFI would draw on the formal procedures that the Air Force already uses to guide its interactions with potential sources early in acquisitions.
- An RFI with these characteristics is compatible with a regulatory docket that gathers facts relevant to a specific case and hence would be suitable for use in a setting where the SBA plays an important role. However, a distinction is that in this context, the RFI gives the Air Force, not the regulator, control over how to use the data collected.

Specifically, the RFI provides an opportunity for the Air Force to identify a class of activities and seek external input on what bundle or bundles of these activities make good business sense. The RFI lays out the benefit threshold requirements for bundling from the SBRA (as defined by the SBA in its final rule). It also provides a structure for providers to discuss and validate the types of benefits associated with their proposed bundle(s) and to quantify the expected benefits to the Air Force. The results of the RFI provide the documentation the Air Force needs to select and generate approval for the optimal bundle(s).

It is clearly in the best interest of providers attempting to win a contract for a proposed bundle of services to help the Air Force choose the best bundle and generate the evidence needed to demonstrate that it is necessary and justified. Similarly, firms that oppose such a consolidation of services have an incentive to demonstrate why the

Air Force should use another acquisition strategy—perhaps no bundling at all. The Air Force can compare the inputs from such sources for any particular setting and determine what bundle(s) the available evidence will support. If well written and structured correctly, the RFI will induce advocates to produce evidence that the Air Force can easily compare and contrast. The Air Force can then use the results to complement other market research in the development of an acquisition plan. If leading-edge providers can document their case for significant performance and cost improvements, the Air Force can structure bundles that, in effect, may favor them in the competition. If not, the conditions of the SBRA cannot be satisfied, and the Air Force should structure its acquisition of services to reflect this.⁴

To successfully solicit useful information from leading-edge providers that have numerous commercial business opportunities, the Air Force must make an RFI as easy to respond to as possible.⁵ We outline a proposed template below. It should be tailored with examples that pertain to the specific bundle under consideration.

Template for the RFI

Air Force provides information about:

- The *administrative details* for the RFI, including the deadline, size constraints, etc., for responses and the ground rules for any Air Force/prospective provider interactions.
- The detailed procedures by which any *proprietary information* from prospective providers will be kept confidential.⁶
- The *specific services* to be reviewed for potential bundling. This section should include information about the types of services,

⁴It is unclear how much discretion the SBA has to ignore or dismiss evidence, especially from first-time RFI respondents.

⁵Several providers told us that they have limited resources for responding to RFIs and Requests for Proposals (RFPs). They decide which to respond to by weighing the probability of generating new business and the ease of response, in terms of the cost in time and resources.

⁶Of particular importance is how the Freedom of Information Act might apply to provider responses.

locations where the services are provided, and any furnished equipment. The more detailed information provided, the better.

- The current *baseline* of unbundled contracts. This section should include detailed information about the types and levels of costs (e.g., labor, purchased materials) and performance associated with the current contracts. (The current cost and performance information is needed to help prospective providers calculate potential benefits for the bundled versus unbundled scenarios.) To the extent that current service contracts in the unbundled baseline are fixed-price contracts, the Air Force may not know the allocation of costs among different types of resources such as labor and materials. Without this information, prospective providers must make assumptions that will make comparisons across responses much more difficult. In addition, some providers may be unwilling to take the time to make the assumptions, although general information about current labor, materials, and performance may be adequate.⁷
- The level of *small business participation* that will be required in any bundled solicitation. This can be expressed in a variety of ways such as a subcontracting goal (e.g., the percentage of the total value of the contract that must flow through a prime contractor to small business subcontractors) and/or a goal for the percentage of the total value of the contract that must go to small businesses—including prime contractors, subcontractors, and suppliers. Providers should factor the required use of small businesses into any calculations about potential benefits associated with bundling.
- The *level of quantifiable benefits* associated with any bundling strategy (relative to the unbundled baseline) necessary to demonstrate that the bundled strategy is necessary and justified. The Air Force should use the thresholds provided in the SBA's final rule. (As the Air Force gains experience with the bundle justification process, it may want to gather evidence demonstrating that the levels of benefits exceed these stated thresholds to en-

⁷For example, the Air Force may not know how much it spends on toilet paper for a base. However, if the Air Force can tell prospective providers some general information such as how many employees there are on the base and the typical hours of operation, prospective providers can estimate these kinds of expenditures.

sure against small discrepancies or disagreements that might arise during interactions with the SBA. If some benefits are dismissed as noncredible, the Air Force will need documentation of other benefits that can be used to fill the gap.)

- How the Air Force *values improvements* in important dimensions of performance. (As will be discussed below, the Air Force provides simple formulas or rules of thumb that providers can use to convert nonmonetary benefits into savings.) Potential types of performance improvements include increased aircraft availability associated with more efficient flightline maintenance or improved parts supply services and increased worker productivity associated with more flexible, responsive facility management services.
- Level of *aggregation* allowed when estimating cost and performance benefits (e.g., whether prospective providers are allowed to make assumptions about typical benefits packages across major service areas or are required to differentiate line item by line item).⁸
- How related *legislative constraints* should be factored into responses. For example, the Department of Labor (DoL) constructs wage floors that providers of services to federal agencies are required to pay for certain categories of labor.⁹ The effects of these constraints may depend on where the services will be provided—i.e., because of aggregation in the construction of the wage floors, some may not be binding for selected career fields in various areas of the country. Accounting for constraints that may affect various services or types of labor differently creates additional burdens on prospective providers to respond to an RFI. Having to identify and factor the binding constraints into responses, rather than using assumptions commonly made in the commercial sector about market wages, requires considerable additional resources.
- The *time period* over which costs and performance benefits may be considered and any *discounting rules* that apply.

⁸The more aggregation allowed, the easier it will be for prospective providers to respond. However, this may make the burden of proof more strenuous.

⁹See Robbert et al. (1997) for a discussion of the Public Service Contract Act of 1965.

The Air Force requests specific kinds of information on the *benefits* the Air Force would receive from shifting from the unbundled baseline to alternative larger bundles (proposed by the prospective providers). The Air Force asks:

- What types of benefits should the Air Force expect to receive? Benefits may include cost savings and performance improvements.
- What levels of these cost and/or performance benefits should the Air Force expect to receive? Nonmonetary benefits must be converted into savings to count toward the thresholds needed to demonstrate that a bundle is necessary and justified. [Providers are asked to use their own models, factors, or rules of thumb to convert expected performance improvements and the value the Air Force attaches to these improvements (provided in the RFI) into levels of savings.] Evidence of the full, exact levels of potential benefits is not necessary—only that they meet or exceed the SBA threshold levels.¹⁰ If providers can demonstrate that expected savings alone exceed the thresholds, providers can simply list any additional performance benefits, rather than go through the potentially costly monetization exercise.¹¹
- What specific information substantiates the predicted types and levels of benefits? Ideally, respondents will be able to provide empirical evidence from similar circumstances with other buyers and justification of why the Air Force should expect similar levels of benefits.¹²

¹⁰As noted earlier, the Air Force may want to encourage calculation of benefits beyond the SBA threshold levels when justifying bundling to reduce the likelihood of delays in cases where some of the benefits may be disputed.

¹¹One colleague expressed concern that specifying the SBA threshold may limit providers' innovation, creating a ceiling on proposed performance and cost benefits offered in bids, rather than a floor. However, it is important to distinguish RFI responses from bids. In the RFI stage, specifying the SBA threshold potentially eases the burden on respondents. Documentation of expected benefits beyond the threshold is not necessary.

¹²Providers' experiences with commercial buyers are more likely to be transferable to the Air Force context the more closely the Air Force's acquisition activities mirror commercial practices. For example, the Air Force has historically bought food services by buying the labor but providing all the physical assets itself. In contrast, commercial buyers generally bundle these together. If the Air Force bundles the labor and physical

In particular, the Air Force asks respondents to address a specific set of potential benefits associated with bundling, tailored to the services under review to the extent possible. The more concrete and quantifiable the evidence to substantiate these potential benefits, the easier it will be for the Air Force to bring this information to bear on the SBA requirements. Such benefits might include:

- Savings from

- Use of fewer personnel:

- Multi-skilled technicians who can perform other jobs when their primary specialties are not needed

- Ability to more efficiently share “filler,” or backup, staff across activities during breaks, vacations, or sick days

- Smaller total provider staff needed to manage provision of services resulting from management efficiencies arising from consolidation of related services

- Process improvements enabled by (a) investments in information systems that may be cost-effective only with a large bundle and/or (b) alignment of related processes

- If regionalizing services, personnel efficiencies owing to consolidation of identical services previously provided at different locations

- Fewer provider staff needed to set up and administer contracts with buyers

- Fewer Air Force personnel needed to set up contracts, pay invoices, and manage provider performance. (As noted above, these administrative savings require a potentially higher burden of proof. Benefits must be substantial relative to the value of the contract. The Air Force should use the threshold provided in the SBA’s final rule.)

inputs for food services, providers will be better able to duplicate their experiences with commercial buyers in the Air Force setting. Similarly, PBSA allows the Air Force to use performance-based statements of work that provide opportunities for providers to transfer their best commercial practices into the Air Force setting.

- Better purchasing power from pooling purchasing activities across services included in a bundle [if a bundle includes responsibility for purchasing inputs (materials or other services) needed to provide the services in that bundle and the provider has better purchasing leverage than the Defense Logistics Agency (DLA) or the General Services Administration (GSA)]
- Reduced profit margin for the provider owing to increased buyer leverage associated with the larger workload
- More efficient use of capital equipment that can be shared across related services or that can be used for the same service at several locations
- Similarly, if regionalizing services, more efficient use of equipment and facilities through consolidation of identical services previously performed at different locations¹³
- Elimination of duplicate overhead expenses (e.g., workers' compensation insurance policies) by shifting from many providers to one or a few primary providers
- Elimination of multiple MIS used to track financial and accounting data as well as dimensions of performance. (This also can reduce costs associated with integrating systems and reconciling data.)
- Performance improvements (e.g., improved flexibility and/or responsiveness) arising from
 - Alignment of subparts of a single process or activity to improve coordination, responsiveness, flexibility, and accountability (e.g., less finger-pointing about poor performance when multiple services are related to the output)

¹³With its current accounting systems, the Air Force may have a difficult time assessing the true cost of equipment and facilities required for certain services (e.g., aircraft component repair or calibration of the repair equipment itself). As a result, it will be challenging for the Air Force to count savings associated with more efficient use of facilities and capital equipment toward the SBA savings threshold.

- Alignment of subparts of a single process or activity to allow for better opportunities to measure and improve the process or activity (e.g., through investments in MIS and the resulting data integrity)
- Alignment of subparts of a single process or activity to provide an incentive for a provider to agree to tie more of its fee to performance
- When bundling the same service across sites, greater consistency of service levels across the whole workload
- When bundling multiple services at a single site, greater flexibility to quickly shift resources to meet emerging buyer needs
- Increased leverage (associated with the larger workload) to negotiate higher performance levels
- Better alignment of the performance of the services in the bundle with the overarching goals of the buyer organization
- Single provider point of contact that is ultimately responsible to the buyer for provision of services
- Reduced personnel turmoil (and thus improved performance) because small contracts are not being continually recompeted
- Reduced personnel turnover resulting from expanded career opportunities across related services.

In practice, it will be difficult to *monetize the value of performance improvements*. To the full extent possible, the Air Force should expect to rely on cost reductions to justify bundles. But the potential performance improvements associated with bundles can be substantial and are directly related to mission performance. To induce potential providers to present information about the monetary value of these improvements, the Air Force should develop a simple, consistent approach to measuring benefits that yields formulas or rules of thumb that

- Reflect a basic understanding of how the Air Force is likely to react to a performance improvement and how that reaction is likely to affect total ownership cost.
- Are as simple as possible, so long as they reliably document improvements that exceed the stated threshold.
- Provide enough information about how the Air Force values performance improvements so that potential providers need not guess about these values and can focus on bringing their own information to the formulas.
- Are accepted by all the key players so that, when they are applied, discussion can focus on the provider inputs rather than on the formulas themselves.¹⁴

Appendix E explains why these criteria are important and uses examples to suggest what kinds of formulas they are likely to yield. Developing such formulas will take considerable Air Force ingenuity. No matter how difficult they are to develop, they are critical to maintaining a simple approach that invites the participation of providers. The Air Force should expect that providers will offer some formulas and rules of thumb better than any the Air Force identifies, so it should not mandate the formulas used. Providing an initial set will illustrate the simple, consistent approach that the Air Force seeks and provide a starting point for a constructive, mutual improvement in formulas over time.¹⁵

The Air Force asks respondents advocating a bundled acquisition strategy to help it better understand two issues associated with *small business participation* in the services under consideration.

- Small business set-asides—which services could be set aside for provision by small businesses (as prime contractors) as part of the small business participation requirement with the least ad-

¹⁴To build such a consensus about appropriate measurement approaches, the Air Force could host workshops in which Air Force functionals, industry service providers, and any other interested parties (such as small business representatives) analyze and debate various techniques for evaluating performance gains from bundling.

¹⁵Note that a similar approach was used to refine the formulas for performing benefit/cost analyses required for federal water projects in the 1960s.

verse (most advantageous) consequences for the benefits described above.

- Subcontracting—how would decreased or increased small business participation (relative to the specified requirement) affect the Air Force’s ability to receive the benefits described above.

As it reviews the information provided by respondents to an RFI, the Air Force should consider several specific *factors* (and warn respondents that it will be looking for them):

- Evidence that levels of benefits (discussed above) do not reflect double counting.
- Evidence that these benefits would actually accrue during the specified contract period.
- Evidence or risks (with justification) that moving from the unbundled baseline to one or more bundles may not produce benefits that meet the threshold necessary to pass the cost/benefit test in the SBRA. In particular, are there specific choices that could be made within the overall acquisition strategy that would reduce the Air Force’s ability to receive benefits from bundling (e.g., a restrictive statement of work that prescribes how services should be provided, or a fixed-price rather than cost-based contract)?
- Evidence that previous claims about the benefits of bundling from a respondent, offered in response to earlier RFIs, are reasonably compatible with the benefits realized from bundling decisions based on those earlier RFIs. (Similarly, evidence that previous claims from a respondent about the bad effects or lack of benefits associated with bundling were realized, if the decision was made to move forward with bundling.)¹⁶

Air Force Roles

This tactical approach shifts significant responsibilities and workload from the Air Force to external, interested parties. However, it does

¹⁶The process also should give providers opportunities to contest or explain evidence that seems to suggest that their previous predictions about bundling were wrong.

not relieve the Air Force of workload or responsibilities. Rather, this approach to bundling will be more successful—i.e., increase performance and reduce costs for the Air Force through more effective acquisition strategies—if the Air Force contracting community and functional communities relevant to the services being considered for bundling take on additional responsibilities and workload. These include the following:

- Identifying which groups of services to examine through RFIs for potential bundling. The leading-edge providers will be less interested in responding to an RFI if the services under consideration for bundling do not match well with those that they (with their subcontractors or alliance partners) typically provide to their commercial buyers, i.e., their core activities. This could happen if the scope is either too narrow or too broad.
- Writing and administering such RFIs. The primary goals here are to (1) make the RFI as easy for providers to respond to as possible and (2) make sure it reaches not only a large group of potential providers but also those providers recognized as offering the greatest performance and cost benefits to their buyers.¹⁷ Thus, RFIs need to be clearly written; their contents need to be up-to-date to reflect evolving best commercial bundling practices (especially the sections on potential sources of savings and performance improvements and small business strategies); and a special effort must be made to identify those leading providers that are most likely to be able to provide the information the Air Force needs to make good bundling decisions and justify them (the identities of these firms may also evolve over time).¹⁸

As discussed in Appendix E, the development and maintenance of formulas and rules of thumb for valuing performance benefits

¹⁷Leading providers of services within the commercial sector typically do not look at the *Commerce Business Daily* or the Electronic Posting System. The Air Force will have to reach them through direct contact (via e-mail or other means).

¹⁸One fairly easy way to locate these providers is by examining the lists of presenters at highly respected trade conferences [for example, Tradeline for facility management services or the Council of Logistics Management (CLM) for third-party logistics services]. In addition, Air Force buyers can contact innovative commercial buyers of services to find out which providers were their top candidates.

for the Air Force is a critical part of making the RFI easy to respond to. These activities should be coordinated with the Air Force's Reduction in Total Ownership Cost (R-TOC) program's activities to take advantage of synergies and to ensure consistency in the Air Force's interpretation of total ownership cost in different settings.

- Accepting the data generated by RFIs and transforming these data into (1) proposed bundles and (2) bundling justifications for submission to the SBA. The Air Force must evaluate the proposed bundling benefits and weigh them against potential risks from the buyer's perspective. In particular, it must be able to evaluate the credibility of methods used to convert nonmonetary benefits into savings and claims about future benefits associated with continuous improvement.

These activities should be integrated, or at least coordinated, with other activities charged with improving Air Force performance in general and/or services acquisition in particular. The importance of these additional Air Force responsibilities and workloads suggests the need for an Air Force bundling strategy that frames and supports the tactical RFI process described here.

STRATEGIC APPROACH FOR IMPLEMENTING THE TACTICAL BUNDLING METHODOLOGY

The proposed tactical bundling methodology can work in isolation. However, because the bundling decision is just one part of a broader strategy for improving performance and reducing costs through purchased services, the Air Force can benefit from effective integration of this proposed approach to data gathering with more general Air Force acquisition planning for recontracting activities. Successful, sustained implementation requires a more strategic, integrated approach to acquisition planning than the Air Force typically uses today. Such an approach is described in an unpublished 1999 briefing by Moore et al. (see Chapter Three, footnote 13) and a 1997 unpublished briefing by Camm and Moore.¹⁹ Here we outline only those

¹⁹Frank Camm and Nancy Y. Moore, "Strategic Sourcing: A Key to the Revolution in Business Affairs," RAND briefing, 1997.

components of such a strategic approach that directly affect the bundling decision and justification process.

Unlike the commercial buyer firms that we interviewed in this research, the Air Force may face bundling decisions repeatedly for many types of services, such as installation support and flightline aircraft maintenance, as major commands and installations undertake recontracting activities. In addition, the proposed tactical bundling methodology requires resource-intensive Air Force (and potential provider) efforts as well as specialized skills. As a result, the Air Force (and potential providers) may benefit from centralization of many of these tactical bundling methodology activities, taking advantage of economies of scale that will likely reduce needed Air Force and provider resources associated with the RFI process, speed up the process, provide an opportunity for deeper investment in expertise where beneficial, and facilitate sharing of proven lessons learned across the Air Force.

In this section, we propose such a centralized approach to making and justifying bundling decisions. To accommodate integration of this centralized approach with broader strategic acquisition activities, we draw on our related research on implementing best commercial PSM practices. However, unlike our discussion of the tactical methodology above, we do not discuss the implementation details here because of the ties between bundling and broader strategic PBSA practices. Such a centralized bundling approach should be integrated into any detailed plan the Air Force puts in place for implementing the new practices associated with PBSA.

The primary responsibility for execution of a centralized bundling approach lies with organizations that we refer to as service industry-oriented sourcing groups—one for each major commercial service industry for which the Air Force has requirements. Examples of such industry groups might include integrated facility management services—including all services from basic facilities services, such as groundskeeping and heating/air-conditioning maintenance, to corporate real estate management services, such as lease management—and third-party logistics services—including inbound and outbound transportation by ship, train, truck, and air; warehousing; and other inventory management services. Each of these industry groups is a permanent (for as long as the Air Force has requirements

for the services), cross-functional team that conducts ongoing market research to understand the current best commercial (and government) practices for all dimensions of acquisition strategies for services that fall within that industry.²⁰ Thus, conducting market research for bundling decisions, as outlined in the tactical methodology, is just one part of these groups' responsibilities.²¹ In addition to looking outside the Air Force, these teams are responsible for understanding which performance dimensions are most important to the Air Force and estimating a dollar value associated with improvements in those areas. For example, from a total ownership cost perspective, what is the Air Force willing to pay for improved parts support that leads to greater aircraft availability? Industry groups are assisted by representatives from the installations and major commands directly affected by recontracting activities.

Each industry group uses the information gathered through its ongoing market research (incorporating feedback from prior RFIs and the Air Force's experiences with bundled contracts) to determine general sets of services that may offer significant benefits to the Air Force from consolidation. By using market research to guide the choices of sets of services for RFIs, the Air Force should be able to generate desired levels of interest from the leading-edge commercial providers of these services. Each set of services thus becomes a potential starting point for an RFI for a particular recontracting activity. Before finalizing the set of services for an RFI, the industry group consults with leadership representatives and technical experts (relevant to the proposed services) from the affected installation(s) or major command(s) to determine if there are unusual circumstances that

²⁰Depending on the kinds of services involved and the Air Force's plans for PBSA implementation, industry groups may be Air Force organizations or joint organizations with other military services or federal agencies. Industry groups may be staffed by Air Force (or joint agency) personnel, consultants with long-term contracts, or some combination of the two. Industry groups may be located in a variety of settings; we saw a number of models during our commercial firm interviews. One of the more popular models would locate each industry group in the organization that is the major buyer of the included services.

²¹Because the Air Force is trying to reduce its infrastructure and headquarters staffs, perhaps the industry groups could be tasked to recover part or all of their costs by "selling" their services to the Air Force organizations conducting acquisition activities that need the expertise offered by these groups.

would warrant additions to or exclusions from the proposed set of services.²²

Once a set of services for a recontracting activity has been finalized, the industry group takes the lead in writing and administering the RFI. The group draws on its prior experiences to write a clear, easy-to-respond-to RFI. It uses information from its ongoing market research to make sure the RFI reflects the most current information about best bundling practices and to identify the leading providers of the included services.²³ The industry group is responsible for (1) the formulas associated with monetizing improvements in various dimensions of performance and (2) the small business participation goal. Representatives from the affected installation(s) or major command(s) participate in this process as advisors. Their expertise is needed to tailor the RFI to reflect any unique circumstances such as the ability/willingness to furnish certain types of equipment, e.g., snow-removal equipment for grounds maintenance in northern locations, increased or decreased value associated with performance improvements, or the necessity of setting aside certain services to be subcontracted to small disadvantaged businesses.

There are many ways the Air Force could approach setting small business participation goals for recontracting activities. One option is to determine a single goal for *all* recontracting activities; however, such a one-size-fits-all goal is likely to be too low for those industries in which small businesses play important roles and too aggressive for other industries that are experiencing rapid consolidation.²⁴ A preferred option is to tailor small business participation goals to the individual characteristics of the services under consideration. The potential for small business participation could be included in the market research process for each service industry. The Air Force

²²For example, grounds maintenance was excluded from a recent Air Force multi-function A-76 study because the service is provided by prisoners. It was decided that no potential providers would want to assume responsibility for managing those workers.

²³Market research will be most effective and efficient for identifying the best large, regional or national providers. Small bundles will most likely attract interest only from small, local providers that will be difficult to identify through the centralized market research process.

²⁴See discussion in Appendix C.

could then strategically set goals across service industries to meet its overarching small business commitments, allocating goals according to the small business opportunities available within each industry group.

Once the RFI has been fielded, the industry group takes the lead in (1) receiving responses and analyzing data to create the optimal bundle(s) for the recontracting activity, (2) constructing the justification for the bundle(s) for submission to the SBA, and (3) working with the SBA to obtain approval for the bundle(s). The group draws on the results of its ongoing market research, prior RFI responses, and the Air Force's experiences when interpreting responses. Records of prior responses from individual providers can be used to validate current estimates of types and levels of benefits associated with bundling. In addition, the aggregate history is helpful when evaluating prospective providers' methods for converting expected nonmonetary benefits into savings or arguments against bundling that ignore the possibility of long-run continuous improvement opportunities. The group draws upon its prior interactions with the SBA when structuring the bundling justification and seeking approval for the preferred bundle(s). Representatives from the affected installation(s) or major command(s) act as advisors to the group, helping to interpret responses in the context of specific buyer needs and the environment in which the services will be performed.

Once the SBA has approved the preferred bundling strategy, the industry group turns over primary responsibility for the bundle and the associated small business participation goal to the team that will conduct the recontracting activity.²⁵

IMPLICATIONS FOR A-76 STUDIES

The Air Force has committed to an aggressive A-76 program. It plans to compete over 31,000 positions through A-76 studies between fiscal years 1999 and 2003.²⁶ The Air Force could potentially reduce its

²⁵However, given their expertise, the Air Force may desire some members of the industry group to continue to serve as advisors or even members of the team conducting the recontracting activity.

²⁶See Bundy (1999).

administrative burden associated with these studies and benefit from increased performance improvements and savings opportunities through the use of large, bundled competitions.

The SBA has determined that the SBRA's requirement to demonstrate that bundles are necessary and justified does not apply to A-76 studies;²⁷ however, the Air Force could still benefit from using a simplified version of the proposed bundling methodology discussed here to make decisions about which services to include in bundles. Incorporating market research for these studies into the service industry groups' activities can create further economies of scale. As the teams learn about best bundling practices for A-76 studies, they can be used to make the market research and creation of RFIs for re-contracting studies more efficient and effective (and vice versa).

An additional benefit of using an RFI to gather information to determine the optimal bundle(s) for A-76 studies is receipt of information early in the process about whether small businesses are willing and able to provide certain services potentially under review. We were told that in a recent large Air Force A-76 study, the study team planned to set aside two particular services for direct contracts to small businesses. However, a few weeks before proposals for the large bundle were due, the team realized that no small businesses were interested in or able to provide these services. Therefore, the two services were added to the bundled scope of work late in the process, disrupting potential providers' proposal activities and potentially delaying the study process.

²⁷If the SBA later reverses this decision, the Air Force could use a slightly modified version of the proposed methodology to gather the information needed to demonstrate that proposed bundles are necessary and justified. An additional complication arises, however, in determining the unbundled baseline. The Air Force would have to gather information about the cost and performance that *would be* associated with many small contracts as well as with large bundled contracts to demonstrate that the net benefits meet the threshold requirements.

CONCLUSIONS

Five key conclusions of interest to the Air Force emerged from this study.

First, although bundled contracts can offer the possibility of significant performance and savings benefits to the Air Force, bigger bundles are not always better for the buying organization. For example, when the scope of a bundled contract exceeds the core capabilities of leading providers, cost and performance can suffer. Similarly, the scale of a bundle can be so large that providers are unable to offer good service consistently across the entire workscope. When bundles are so large that leading-edge providers are not confident of their ability to perform well, they may decline to even bid on the workload, unwilling to risk damage to their reputations. This limits possibilities for the Air Force to benefit from the most innovative practices. The Air Force can benefit from carefully weighing potential benefits against potential costs associated with alternative sizes of bundles, tailoring the structure of bundles to the characteristics of the relevant services and the goals of the buying organizations.

Second, because benefits from bundled contracts can vary dramatically across specific circumstances, there is no easy, one-size-fits-all approach to justifying chosen bundles across the range of services the Air Force is likely to purchase. For example, the levels of cost and performance associated with current provision of included services affect the benefits the buying organization can receive from bundling. Clearly, benefits associated with bundled contracts will be larger the less efficient and effective the pre-bundling provision of the services. Also, other dimensions of acquisition strategies can affect the levels of benefits received from bundling. For example, pro-

cess-based statements of work, selection of the low-cost (rather than the best-value) provider, fixed-price contracts that provide weak incentives for continuous improvement, or intrusive (and costly) quality assurance methods may erode the benefits the Air Force could receive from large bundled contracts.

Third, leading-edge providers are the best source for the information the Air Force needs to tailor and justify bundled contracts. RFIs can be effective tools to help Air Force buyers elicit quantitative information from prospective providers about the benefits of alternative bundling strategies. However, the Air Force must interest these providers in responding by making the RFI as clear and easy to respond to as possible and providing all the information that is needed to eliminate guesswork on the part of the provider. In particular, the Air Force must provide detailed information about the services that can be potentially included in bundles, with baseline information about current costs and levels of performance, as well as the goals of the buying organizations.

Accurate baseline information is also important because estimates of potential savings and performance benefits from alternative bundling strategies will only be as good as the baseline data underlying them. If the Air Force is unable to supply accurate information about current levels of cost and performance for the included services, provider estimates of benefits from bundling will not result in a firm basis for justification of the preferred strategy.

Fourth, Air Force buyers have challenging roles to play in the RFI process to ensure that the Air Force is able to structure and justify bundles that support the buying organizations' goals. At the heart of the Air Force's roles is the need to perform quality market research to identify (1) the leading providers that can help the Air Force structure and justify bundles and (2) the best commercial practices and benefits associated with bundling. Without this information, Air Force buyers cannot write effective RFIs to elicit the needed information and analyze responses.

The Air Force buyer must choose an attractive set of services for potential inclusion in bundles. If the set is too broad or narrow, leading providers will be uninterested in responding. The discussion of benefits that the Air Force is most interested in should reflect best

commercial practices so that providers can easily understand what the Air Force wants. Buyers must create simple rules of thumb for monetizing performance benefits and determine the appropriate goals for small business participation. Finally, once responses are received, the Air Force buyer must analyze the data to structure bundles that best meet buyer goals and construct justifications for them. These roles depend critically on the Air Force's ability to perform high-quality, ongoing market research and will require that buyers receive training in new skills.

Finally, because of the special skills required to successfully implement the RFI approach, the resources required for the Air Force to write effective RFIs and for providers to respond, and the fact that the Air Force will be undertaking similar bundling activities frequently, the Air Force could benefit from centralizing the proposed RFI approach to making and justifying bundling decisions. By facilitating retention of lessons learned over time, such an approach would be more efficient and effective for both the Air Force and prospective providers. Because structuring the bundles of services is only one small part of broader acquisition strategies, the Air Force could also benefit from integration of these bundling activities with its broader, strategic PBSA market research and decisionmaking activities.

Appendix A

GENERAL BACKGROUND ON DEVELOPING AND USING INFORMATION ABOUT “BEST COMMERCIAL PRACTICES”

Over the past few years, we have interviewed more than 40 specially-selected commercial buyers and providers of services to identify the best purchasing and supply management practices in the private sector. In this appendix, we describe the philosophy underlying this research and our general methodology.

1. **Broadly speaking, what is your basic analytic approach?** We monitor new purchasing and supply management practices of selected commercial firms to identify opportunities for innovation in Air Force purchasing and supply management. We define “commercial” firms to be those that operate primarily outside the traditional defense-industrial base. We select firms recognized by their peers as excelling in particular activities relevant to purchasing and supply management.
2. **Why is this approach relevant to the Air Force?** Best commercial practices and policies relevant to the Air Force appear to benefit the companies involved. The Air Force should understand these practices and policies for two reasons:
 - Many of the practices and policies may offer useful lessons for the Air Force itself. They may suggest practices or policies that the Air Force could successfully adapt to its own setting.

- If the Air Force wants to do business with the commercial firms using these new practices, it must understand what those firms expect from a buyer. Best commercial practice can help the Air Force understand how it needs to change its service acquisition policies and practices to participate in the new commercial approach to purchasing and supply management.

Note that if the Air Force uses new purchasing and supply management practices to get better access to good providers, this access offers a natural window that the Air Force can use to learn about a broader range of commercial innovations at these same firms.

3. **Why focus only on best *commercial* practice?** Best government practice is useful to monitor as well. The Air Force already has a strong tradition of monitoring best government practice; other organizations are helping it do this now. The Air Force is less familiar with commercial practices outside the traditional defense-industrial base. Our work emphasizes this potential new source of insight. Further, as noted above, to the extent that the Air Force wants to reach beyond the traditional defense-industrial base for goods and services, it must understand what is happening in the commercial mainstream.

The commercial sector of the economy is over 20 times larger than the traditional defense sector. If innovations are equally likely to occur anywhere in the economy, they are 20 times more likely to occur in the mainstream commercial sector than in the traditional defense-industrial base. And where the commercial sector is more innovative than the defense sector, the odds go even higher. The commercial sector is likely to be more innovative in activities of core competence that lie primarily outside the defense-industrial sector. These include many support services that the Air Force buys from outside sources, such as facility management, generic business services, personal services, and much of logistics.

4. **What exactly is a “best commercial practice”?** The trade literature and trade conferences relevant to particular industries or professional communities routinely identify exemplar activities that firms in those industries or with these functions recognize

as exceptional. These activities are typically concrete examples of efforts to implement broader management principles that these industries and professions value. They demonstrate, potentially in great detail, how to apply these principles in particular circumstances. For example, Caterpillar has been broadly recognized for its exceptional level of global supply effectiveness in materiel support activities. L.L.Bean has been broadly recognized for the satisfaction of its retail customers. Chrysler has been broadly recognized for its effective management of suppliers. Xerox has been broadly recognized for its efforts to design equipment that simplify recycling at end of life. Examination of these firms can provide a great deal of practical detail about how they do what they do well.

A common characteristic of many firms recognized as best in class for a particular activity has been their use of the principles of total quality management (TQM) to solve business problems.¹ TQM in effect identifies a firm's key customers and their needs, maps the processes the firm uses to serve these customers, and then continuously improves the firm's knowledge of its customers and the processes it uses to serve them. TQM explicitly recognizes the importance of motivating people to change their behavior on the job to execute these tasks and involving all of the people relevant to each task. Broadly stated in these terms, TQM sounds like common sense. Examples of "best commercial practices" often provide practical information about how firms have successfully applied these broad quality principles in specific circumstances.

Firms value information about "best commercial practices" first as a kind of existence proof; they demonstrate that certain ideas they may be thinking about can in fact work in practice. Specific examples of these practices then provide concrete information that can help these firms think about how to adapt these practices for application in their own organizations. Firms differ

¹TQM is more pervasive in corporate suites than it might first appear to be. In many firms, TQM has become such an integral part of day-to-day business that it may not be recognized as a distinct program. Others maintain specific quality-oriented initiatives but do not identify them as TQM. Motorola, General Electric, and Honeywell, for example, all continue to run Six Sigma programs that draw heavily on the principles of quality.

significantly in the ways that they implement particular “best practices,” like shortening process cycles or making measures of cost more inclusive. Firms viewing information about “best commercial practice” know that they can rarely simply transfer a practice from another organization to their own, but viewing a practice in another setting helps them think about how they might emulate such a practice in their own setting.

The best commercial firms do not all use the same “best commercial practices.” In a market with active innovation, it is common to observe many experiments in progress at the same time. In effect, the marketplace is testing alternative practices all the time. As particular practices stand out in this competition, they become the “best commercial practices” of the moment. As innovation and competition persist, these “best” practices may mutate or be displaced by other practices that survive the ongoing competition more successfully. “Best” practices that succeed in one setting may not do so well elsewhere, allowing many different “best” practices to co-exist. Each organization seeks the practices that give it the best performance possible. An important element of assessing “best commercial practices” is to understand enough about the context in which they operate to understand why they succeed there and whether they could succeed elsewhere.

5. **How does assessment of “best commercial practices” relate to benchmarking?** As described above, assessment of “best commercial practices” is one important form of benchmarking. Such “high-level” benchmarking is often the first step toward a more thorough understanding of practices in another organization. The second step of “quantitative” benchmarking identifies performance metrics relevant to the activities in question and collects information across organizations on these metrics. Such information sharpens the nature of observed differences in performance and helps the observing organization understand where it should focus its attention as it prepares to adapt practices, policies, or other lessons learned from an observed organization. Such assessment prepares the way for a third step of “practitioner” benchmarking in which relevant personnel from the observing organization spend time with their counterparts in the observed organization to gather more detailed informa-

tion—much of it often latent—on sources of observed differences in the application and performance of observed practices.

In sum, the information we develop on "best commercial practices" can prepare the way for more quantitative, detailed, and in-depth benchmarking efforts. As the efforts proceed, the Air Force must be prepared to play an increasingly important role in the development and assessment of relevant data. The Air Force can then apply these data to make design decisions about changes in Air Force practice or policy.

6. **How important is the Air Force's ability to adapt and transfer a best practice?** Very important. It is one thing to identify a potentially useful practice and another to adapt and transfer it successfully to a new setting. New practices are more interesting, other things equal, if they are likely to be easier to adapt and transfer.

This raises a profound challenge with regard to the Air Force. (1) In many ways, the Air Force is unlike the commercial firms that currently benefit most from monitoring "best commercial practices." It does not use TQM as a routine, operational part of its management activities in the same way that these firms do. (2) By opening itself to "best commercial practices," it can become more like them and hence, over time, benefit. Each additional best practice contributes to an institutional base or infrastructure that values operational TQM in the Air Force; as this base grows, each additional step gets easier. (3) But for now, the Air Force is not likely to benefit as much from understanding a new practice as a commercial firm already familiar with seeking out and adapting new ideas. Quality begets quality; an inherent aspect of operational TQM is an outward perspective throughout an organization that supports emulation of best practices observed elsewhere.

The Air Force faces a chicken-and-egg problem. Until it becomes more familiar with how the commercial sector works, it will have difficulty contacting that sector and learning from it. One response is to conclude that best practices closer to home are easier to adapt and hence more appropriate to monitor. That is how some justify a focus on best government practice. This approach permanently excludes the Air Force from the

large commercial sector where so much innovation is occurring. Only by observing that sector, despite the current difficulties of adapting the practices observed, can the Air Force begin to reduce isolation and improve its ability to adapt and transfer these practices in the future.

7. **TQM is qualitatively different from traditional management. How can incremental changes help the Air Force introduce TQM-based innovation?** Analysts have long understood that successful implementation of operational TQM requires coordinated changes on many fronts.² Making only a few incremental changes relevant to TQM can make things worse, rather than providing a smooth transition toward full implementation. For success, new performance metrics must be linked to new incentive systems. New information flows, often supported by formal new management systems and structures, must replace old formal and informal information flows. The leadership must hold the coalition of all affected parties together as it seeks the new optimum or pattern of work. All affected parties must ultimately change their behavior on the job in a coordinated fashion; some of this change must be worked out along the way. And so on. Failure to go all the way causes confusion and misdirection that allow the inertia that is natural in most organizations to overwhelm any attempted change; the confusion degrades current performance and feeds longer-term cynicism about productive change. Conclusion: Small changes won't do; the Air Force must commit itself to massive cultural change.

This observation has two implications for our work:

- It is critical to understand all of the different things that must change for a TQM-related change to succeed. Studies suggest that 50–70 percent of recent major change efforts in corporations have failed (Mauer, 1996, p. 18). Many problems with reengineering in the commercial sector can

²Technically speaking, TQM creates basic nonconvexities or complementarities in a production function that in turn yield a nonconvex profit function. In this setting, small departures from a non-TQM optimum degrade performance; large departures are required to reach a section of the profit function where incremental adjustments finally lead to a better TQM-related optimum.

probably be traced to failures to recognize a fairly short list of factors relevant to implementing significant changes of any kind.³ Careful assessments of difficulties with acquisition reform in DoD would probably reveal a similar pattern.⁴ In our analysis, we seek to identify all of the things that must change for a particular practice or policy change to succeed. We seek to understand what is necessary for success, even if we cannot identify factors that guarantee success.

- Any implementation effort must proceed in steps to remain manageable. The concerns about nonconvexities tell us that each step must be complete enough to allow all of the changes relevant to its success. A pilot study illustrates the challenge of significant organizational change. Each pilot must be complete enough to be self-sustaining. It must include not only the change at hand but all the relevant supporting institutional factors, from leadership to incentives to training, and so on. Pilots can make it easier to do this by providing a well-defined arena in which to apply waivers to current policies and to apply other qualitative changes. Of course, such a pilot study does not simply happen; it must be carefully planned and executed.⁵ More difficult is moving from one pilot to total institutionalization—removing the “scaffolding” from the site of the pilot itself and transferring its lessons learned to other parts of the organization.

8. How do you know “best commercial practice” is helping the companies involved? This question can be addressed on two levels: (1) Why should we think that TQM-related practices and

³These factors are discussed in Moore et al.’s 1999 briefing (see Chapter Three, footnote 13).

⁴For an example of such an assessment, see Dertouzos et al. (1998).

⁵For example, General Motors initiated its move toward global adoption of the ISO-14001 environmental quality management standard by proving the concept in pilots at five qualitatively different kinds of manufacturing plants. Each pilot incorporated all the changes required to sustain ISO 14001 at that site. An external certification process helped verify this. Once this proof of concept was complete, General Motors used lessons learned in the pilots to rapidly complete implementation of ISO 14001 at its manufacturing plants worldwide.

policies are successful? (2) Why should we think that any particular practice or policy observed is successful?

Four arguments can be made in favor of TQM-derived practices and policies:

- They appeal to common sense. The basic tenets of TQM link each activity in an organization to a final purpose and then seek to tighten that linkage. They formally recognize the role of people in these linkages and the importance of motivating these people to do the right thing. The ideas appeal to basic logic. They are formally compatible with the basic tenets of the microeconomic theories of the firm, of the behavior of individuals within a firm, and of transactions between organizations. They are formally compatible with the basic tenets of industrial engineering approaches to designing and managing processes. They are formally compatible with the findings of organization science on designing organizations and motivating the people in them.
- Organizations that practice operational TQM appear to benefit from it. Exactly “what TQM is” has always been an issue of contention. One broadly accepted definition links it to the Deming and Baldrige Awards given to a select few organizations in Japan and the United States. The criteria used to make these awards offer attractive, operational definitions of TQM. Empirical evidence suggests that firms that apply for the Baldrige Award tend to perform better financially than firms that do not. Firms that win the Baldrige Award tend to perform better financially than those that simply apply. Do good firms pursue the award, or does choosing to pursue the award improve performance? Opinions differ; organizations that have pursued the award agree that doing so improved their performance and offer examples that support their beliefs.
- The use of a TQM-based management standard, the ISO 9000 series, has expanded rapidly since its introduction in 1987, as a key criterion in the qualification of suppliers. In many industries, firms without an appropriate ISO 9000 certification can no longer compete as mainstream pro-

viders. The American automobile industry recently used ISO 9000 as the basis for a new supply qualification system; the American aerospace industry is in the process of doing the same thing. This broad voluntary acceptance of a TQM-derived management standard speaks to the confidence that buyers in the markets affected have in the practices that this standard certifies.

- Many point to recent macroeconomic trends as evidence of the value of TQM in the American economy. For example, they point to a recent marked reduction in inventories relative to economic activity. TQM practices systematically reduce the optimal level of inventories; observers take the recent reduction as a proxy for the broad acceptance of and effect of TQM practices that could reduce inventory levels. Similarly, they point to the ongoing period of economic expansion, the longest in U.S. history. Many factors contribute to this, but systematic productivity gains are a key part of it. Effective investments in information technology did their part; according to this perspective, they both facilitated application of a TQM emphasis on integration and data sharing, and benefited from TQM perspectives that qualitatively changed the way U.S. industry applies information technologies.

These broad statements all have their detractors. But they underlie a growing consensus in corporate America that operational TQM policies and practices add value. Skeptics can argue that the principles of TQM are so broad that the real test of what works depends on the particulars of a specific innovation. Does the innovation produce results or not?

This brings us to the second level of inquiry. Why should we think that any particular practice or policy observed is successful? Developing an unequivocal, quantitative answer to this question is difficult for several reasons:

- The changes that interest us are all recent. Not enough time has elapsed to reveal the long-term effects of individual changes.

- Individual changes rarely occur in isolation. In an increasingly turbulent marketplace, change is the norm. Simultaneous initiatives within one firm affect one another, and the effects are hard to sort out formally. Often, one change sets the stage for realizing the full benefits of another change.⁶
- Even if these problems could be solved, changes are specific to individual locations and tailored to individual cultures, strategies, priorities, and capabilities. These characteristics complicate efforts to conduct cross-sectional statistical tests of the effects of initiatives started either in formal experiments or in the normal course of business.
- These changes lie at the cutting edge of the strategies of the firms involved. Although firms have been generous in their willingness to provide access to personnel and many documents associated with these changes, they have not provided access to proprietary data that might be used to test all public statements about these changes.

What is an appropriate analytic response to these circumstances? Keep in mind that, in the majority of our work, we focus on the first stage of benchmarking—the identification of high-level targets of opportunity that deserve further quantitative and participant benchmarking. To do this, we

- Use a number of analytic paradigms that help us predict the effects of changes in policies and practices, including microeconomics, industrial engineering, organization science, and the management consulting literature on operational TQM and change management, to develop formal data collection instruments.

⁶For example, direct vendor delivery (DVD) agreements can improve final mission performance and cut total ownership costs by aligning the materiel management process more effectively. The improvements will likely be even larger if a buyer first rationalizes its supply base and focuses its DVD agreements on a small set of providers. The size of net benefits from using DVD agreements appears to depend significantly on the extent of supply base rationalization.

- Use these instruments to structure data searches and, in particular, elite interviews with multiple participants in a relationship. We gather as many empirical data, qualitative and quantitative, as buyer and seller in a particular relationship will provide.
- Seek to use these data and qualitative research methods, like triangulation,⁷ to construct a story of the relationship relevant to each purchasing and supply management change we examine. We seek an internally consistent story that is consistent with all the facts that we can collect. We seek a story that is consistent with microeconomics, industrial engineering, organization science, and the management consulting literature on operational TQM and change management. These paradigms help ensure that the internally consistent story we have constructed makes sense in a broader context; it is "robust" across different disciplinary perspectives, and it is consistent with our understanding of cause and effect for changes of this kind.
- Use the resulting story to ask whether a particular change is likely to yield net benefits. Is it structured in a way that is likely to yield net benefits? Is it compatible with the organization's broader strategy? Is the institutional support being provided for the change likely to support continuing success?⁸

⁷Triangulation is a formal method for (1) seeking evidence for the hypotheses that form a story from multiple, independent sources, and (2) piecing this evidence together into a coherent story that draws on all these sources. The journalistic standard of seeking two independent sources for factual statements before publishing is a well-known variation on this approach. Triangulation uses several points of reference to nail down a single "fact." It involves an active process of comparing data about a specific point, identifying additional data that would help clarify that point, seeking those data, and continuing, until a useful story emerges. For more information, see Yin (1994).

⁸The Air Force increasingly addresses this question by asking if the Air Force "culture" is compatible with a change. We capture cultural factors in our description of the context of a change. We do this by asking specific questions about metrics, incentives, information flow, training, roles and responsibilities, oversight, and so on, to spotlight what aspects of a corporate culture are important to success in a particular circumstance.

This last step sets the stage for asking if an analogous change could benefit the Air Force. The questions above extract points from our story that are directly relevant to the potential that a particular change offers the Air Force. Is it compatible with the Air Force's basic strategy to improve military capability, safety of flight, quality of life, and the level of total ownership costs, while complying with administrative law? Can it be structured in a way that is likely to yield such net benefits in the Air Force setting? What institutional support must the Air Force provide to adapt and transfer such a change?

9. **If “best commercial practice” is such a good thing, why aren't more firms using it?** Or, more bluntly, from an economist's point of view, how can any but best commercial practices survive in the marketplace? Isn't the simple survival of any practice or policy in a competitive marketplace evidence of its efficacy? The survivor principle is central to an economist's understanding of how to compare alternatives in a competitive marketplace. Our work suggests that two factors help explain why only a few firms use the practices that interest us.
 - Different organizations operate in different environments and hence have different strategies for success. Strategies suited to a quiet environment, in which technology and organizational forms are quiescent and production and market patterns are well established, are not well suited to a dynamic environment, in which technology and organizational forms are in flux and players are competing aggressively to exploit this flux. The Air Force is now experiencing two profound changes in its environment. It is moving from a Cold War environment in which the threat was fairly stable to a “boiling peace” environment in which the threat is in continuous flux. Simultaneously, it is moving from an economic environment in which arrangements in potential commercial support markets such as logistics and facility management were quiet, to a qualitatively different, quality-driven environment in which potential commercial support markets are roiling with technological and organization experimentation and change. Taken together, these changes call for basic changes in Air Force strategies relevant to its mission and the support of its mission. To reflect

this situation, we have focused on best commercial practices relevant to a dynamic environment. These differ from practices Air Force personnel may have observed in Air Force support markets in the past and certainly differ from practices in quieter commercial markets today.

- We observe rapid diffusion of many of the ideas we examine. Trend data in logistics, facility management, and information services show that over time a growing number of firms are adapting comparable practices. They increasingly participate in quantitative benchmarking networks to compare notes. They explicitly identify exemplar firms that they are emulating. They explicitly target personnel in exemplar firms to hire away. Such diffusion takes time. It takes time for people in firms to identify the importance of changing to ensure their future survival. It takes time to convince senior leadership and initiate change. And it takes time to implement and institutionalize change. From this perspective, we understand much of the diversity we observe in business practices in dynamic markets as evidence that diffusion is not complete. When it is, only firms using these new best commercial practices will remain in these dynamic markets. That said, change is endemic in dynamic markets; diversity will persist as waves of diffused innovation wash through the population of surviving firms in these markets. In fact, this is probably the situation we observe today.

10. **Why focus on best practices? What about poor practices that should be avoided?** This question can actually be phrased in two different ways, both relevant here.

- Not all prescribed innovations work as expected. For example, as noted above, many recent corporate efforts to make major changes have failed. Objective observers generally agree that acquisition reform in DoD is not achieving all of the benefits expected of it. Apparently worthwhile initiatives sometimes succeed and sometimes fail. This perspective asks why we do not structure analysis around experiments, either formal or natural, which examine a number of organizations that initiate a single, well-defined change, and ask (a) how often the change succeeds and (b)

what factors contribute to its success. As noted above, we have not taken this approach because we could not develop a large enough matched set of changes and track it long enough to develop statistically significant measures of efficacy. The specificity of individual changes and their relationships to the contexts in which they occur, the turmoil in the markets that currently interest us, and the range of changes under way in individual organizations do not lend themselves to such analysis.

- As much can be learned from failure as from success; in fact, it is always preferable to learn from another's failures rather than your own. Why restrict the inquiry to success? We favor successes for two reasons.
 - a. To be blunt, private organizations are more likely to share information about successes than failures. As we have constructed stories about these organizations, we have learned a great deal about their difficulties along the way. As we have worked with them over time, enough trust has developed for us to learn more about such difficulties; we hope to continue learning about problems as the work and our relationships mature. Pursuit of success has opened doors for us; trying to understand success has led us to many interim failures and the strategies these successful firms used to overcome these problems. Ultimately, these are the lessons about failure that interest the Air Force most—what works in the end? That brings us to our second reason for favoring successes.
 - b. Much of our work is effectively the first step in a longer-term benchmarking activity that the Air Force must ultimately take up itself to succeed. Activities most appropriate to such benchmarking are successes, not failures. We are seeking potential that the Air Force can exploit in its own setting. The Air Force needs to understand when such potential is likely to work and when it might fail. For reasons explained above, we have not sought to track the good and bad outcomes of specific changes made in different places. Instead, we have used instances that resulted in success to understand

how that success occurred. The story we develop for each relationship invariably identifies "do's and don'ts" relevant to any change in the relationship.

We do not claim that success in one setting guarantees success elsewhere. Quite the contrary; we seek the factors that appear to support success so that we can increase its likelihood in an Air Force setting.

11. **TQM focuses on internal processes. How can it inform purchasing and supply management practices and policies?** TQM initially focused on internal processes. The idea of identifying customers and the processes that serve them, and then improving the understanding of these customers and the processes that serve them is easiest to apply when all of these factors can be addressed in one organization. That is true whether the organization is one site location in a corporation, one function in a corporation, a single corporation, or a set of partners in a supply chain. Over time, organizations have learned to apply the basic principles of TQM in broader and broader contexts. Speaking broadly, most of the efforts under way today to integrate value chains that involve many organizations can simply be seen as practical applications of basic TQM principles across contractual boundaries.

Seen in this way, operational TQM informs our understanding of purchasing and supply management in at least three ways.

- It provides useful insights about how to improve the performance of the function traditionally responsible for most purchasing and supply management in the Air Force—acquisition and, more specifically, contracting. It suggests fundamental changes in metrics, incentives, training, and the like relevant in this setting.
- It provides useful insights about how to improve the joint performance of all the functions relevant to purchasing and supply management and coordinate these functions in a strategic manner. It suggests fundamental changes in the leadership of purchasing and supply management, career management, decision-making and oversight, and so on.

- Most important, it provides useful insights about how to improve the management of suppliers themselves and a buyer's relationship with them. It suggests fundamental changes in source selection criteria, performance metrics, contract types, and the like. These changes are integrally linked to changes within acquisition and across the Air Force as a whole.

12. **Will the “best commercial practices” you identify fit the Air Force?** As we seek potential opportunities in commercial practice, we are ever cognizant of what might benefit the Air Force, in a number of dimensions.

- We have focused our examination on activities of immediate interest to the Air Force—logistics and facility management in particular.
- We continue to ask how important operational TQM is to the success of new practices. The Air Force is not a TQM-based organization. Many believe that the Air Force tested TQM and it failed in the 1990s. That is not true, but the perception complicates any effort to adapt and transfer quality-based innovations to an Air Force setting. If we were to go back 25 years, the management bureaucracies then present in the commercial organizations we study today looked very much like those in the Air Force then. Today, these commercial organizations have changed a great deal more than the Air Force has. How did they become TQM-based organizations? What does that tell us about how the Air Force might change? These questions are ever present in our studies of individual changes and the relationships relevant to them.
- The Air Force is a functionally oriented organization. The commercial firms we have studied are moving away from this orientation. The wartime mission of the Air Force, its rotation policy, and its determination to minimize lateral entry into its labor force make it hard to follow the lead of the commercial exemplars. Given that it must retain a strong functional structure, can the Air Force move toward the process focus that so many commercial practices use today? That remains an open question. We seek to under-

stand the importance of cross-functional arrangements in new commercial process-oriented innovations and how the Air Force might adapt its functional arrangements to emulate them.

- We continually compare the Air Force with the commercial organizations we study to help understand how in particular the Air Force differs from those organizations, and hence to which dimensions we need to give special attention when thinking about transferability. For example, their metrics and incentives differ, but the implications of these differences are not the same for metrics and incentives. Most of the metrics we have seen can be transferred to the Air Force (the exceptions are externally determined values of outputs); it is not realistic to say that cash-based incentives can be as easily transferred. Could different promotion criteria, awards, and other incentives take the place of commercial cash payments? We attempt to highlight the importance of finding effective incentives in the Air Force.

To summarize, we seek to identify what factors are most important to successful adaptation and transfer of new practices to the Air Force. We try to identify changes that will be easier to make, but we do not restrict our attention to them. We also seek changes likely to yield net benefits so large that the Air Force should be willing to stretch to achieve them. Without such changes, the Air Force would never look beyond best government practices. We cannot guarantee that all of these changes will succeed in an Air Force setting. In the end, quite certainly some will fail. We want to avoid that but, when it occurs, we also want to learn from the best commercial firms how they have mitigated the effects of such failures and learned from them.

13. **In a few words, then, please summarize your basic analytic approach.** We seek opportunities to improve purchasing and supply management practices and policies in the Air Force. We look for them in the commercial sector because the Air Force has not, and we believe great opportunities exist there, even though it will be hard to adapt and transfer them successfully to an Air Force setting. We also look for commercial practices to help the Air Force learn how to change its approach to acquisition in

ways likely to increase its access to the best commercial providers.

We do not expect to identify quantitatively precise estimates of the net benefits that new practices and policies might offer the Air Force. That is demanding more than the available data allow and fails to recognize the importance of adapting a practice observed in the commercial sector before transferring it to the Air Force. We focus rather on understanding the context for an observed change and its basic logic in that setting. Drawing on several relevant analytic paradigms, we ask if the change should yield net benefits. We ask what institutional support is required to realize these net benefits and what factors are relevant to bringing this change to the Air Force.

If we succeed, we will identify changes that offer enough potential for net benefits to justify further and more detailed study. Commercial experience suggests that the Air Force must ultimately employ its own practitioners to gather the data and make the decisions required to design changes in Air Force practices and policies. Our work here is a prelude to that effort.

EXAMPLES OF STRATEGIC SUPPLY-BASE REDUCTION

Strategic supply-base reduction has become a major tool used by leading firms to reduce costs and improve quality, responsiveness, flexibility, and other key dimensions of performance. In this appendix, we offer examples from the literature of how a broad range of large firms and one small firm are adopting this practice.

AlliedSignal

AlliedSignal's first step in its sourcing strategy was to prune the supply base from 10,000 in 1992 to fewer than 2000 in 1997. Plans call for its supply base to shrink further to 1500 over the next few years. AlliedSignal's automotive sector saved \$28 million in 1993, which came primarily from winnowing the supply base and negotiating new contracts (Minahan, 1997).

AMR

In 1995, AMR had 7200 suppliers. In 1996, buyers reduced the supply base by 30 percent. They reduced suppliers another 16 percent in 1997 and plan to remove another 13 percent by the end of 1998. The year 2000 goal is 2000, which represents a 70 percent decrease in AMR suppliers since 1995. AMR's supply management strategy has resulted in more than \$250 million in savings (Avery, 1998).

Boeing

“Boeing will cut 13,000 of its 31,000 suppliers over the next four years, mostly smaller companies that duplicate equipment” (Rae-Dupree, 1999).

Chrysler

From 1989 to 1993, Chrysler reduced its production supplier base from 2500 companies to 1114 and fundamentally changed the way it works with those that remain. The time to develop a new vehicle is approaching 160 weeks, down from an average of 234 weeks during the 1980s. The cost of developing a new vehicle has decreased an estimated 20 to 40 percent. Since 1988, Chrysler has reduced its number of buyers by 30 percent and has increased the dollar value of goods procured by each buyer. Profit per vehicle has increased from approximately \$250 in the 1980s (taking the average from 1985 through 1989) to \$2110 in 1994 (Dyer, 1996). “Now about 90 percent of Chrysler’s purchasing volume is with 150 suppliers” (Lewis, 1995).

Donnelly

From 1996 to 1997, Donnelly’s newly centralized purchasing activity achieved a 5.2 percent reduction in projected material costs, a 25 percent improvement in supplier quality measures, and was on target for a 50 percent reduction in the size of its production supply base. For example, Donnelly reduced its injection-molding supply base from more than 35 to 5 and its stamping supply base from 21 to 6 (Wincel, 1998).

Ford

Ford reduced its stamping supply base from 150 suppliers to 11. Of those 11, 7 are minority owned, supporting Ford’s supplier diversity efforts (Wincel, 1998).

GEC Marconi Electronics

GEC Marconi replaced the multiple systems it used to manage and order parts with a single system. As a result, it was able to reduce its supply base from 97,000 to 28,000 and generate a yearly savings in its component costs of 15 percent (Bylinsky, 1999).

Harley-Davidson

"Harley-Davidson has reduced its preferred less-than-truckload (LTL) carrier base to seven from 68. . . . [T]he company has trimmed \$1.5 million from transportation costs. LTL on-time performance has improved to nearly 98 percent from 95.5 percent. Service failures have been reduced substantially. Improved performance has allowed development and implementation of cross-docking opportunities, which have reduced transit times between plants by one to two days" (Bradley, 1998).

IBM

"In 1993 IBM had about 4,900 production suppliers. Now about 85% of IBM's \$17.1 billion in production purchases is with 50 suppliers." "Commodity councils that leverage IBM purchasing worldwide have resulted in IBM sourcing parts at price[s] that are 5%–10% below industry averages." "Leveraging has had a big impact on the bottom line. 'Last year [1998] we saved a little over \$1.5 billion on \$21 billion we spent . . . by leveraging, negotiating, and moving business to our preferred set of suppliers'" (Theresa Metty, Vice President, Global Customer Solutions and General Procurement for IBM).

"All other things being equal, we would source with a supplier who has multiple capabilities and we tell them that" (Carbone, 1999).

Intel

"Since the mid '80s, Intel has made a serious effort to consolidate its supply base, adopting an $n + 1$ rule-of-thumb in determining the maximum number of suppliers ('n') needed in each commodity area to satisfy production requirements." That is, Intel will not have more

than one extra supplier above the minimum number needed to satisfy its production requirements.

For example, the number of suppliers of lead frames has been trimmed from 12 to 3, ceramic packages from 6 to 3, and wire and molding compound from 3 to 1 (Morgan, 1995).

Kraft Foods

“Recent initiatives to consolidate activity [copier equipment and records retention] with a single vendor for each function are generating annual cost savings of 30 to 40 percent” (Westfall, 1999).

Merck

Merck reduced its total global supplier base from 40,000 in 1992 to fewer than 10,000 in 1997 (Genna, 1997). Plans for 1998 called for an additional reduction in Merck’s active supplier base to 7000 or fewer (Hunt, 1998).

Motorola

Supplier head count throughout Motorola was trimmed substantially from 1987 to 1991. In the communications sector, the supplier base was reduced from 4200 in 1985 to 1155 in 1991, and preferred suppliers who receive 76 percent of the sector’s business dropped from 800 to 333 (Morgan, 1995).

Motorola’s communications sector quickly reduced the number of its capacitor suppliers from 110 to about 25. The immediate cost savings in paperwork and logistics were so dramatic that they more than justified the costs of expanding Motorola’s supply-base reduction efforts to other commodities. It took another year to reduce the number of suppliers to about 15, and efforts continued to trim the supply base further (Lewis, 1995). In 1991, three suppliers had 94 percent of Motorola’s global capacitor business. This supply-base reduction saved the company several million dollars (Morgan, 1995).

Nissan

Nissan plans to halve its worldwide supplier base to 4000 by 2002 and then leverage its increased business with the remaining suppliers to reduce prices paid by 20 percent (Magnier, 1999).

Osram Sylvania Products

In 1996, Osram Sylvania launched an intensive search for a single provider to consolidate as many of its 125 freight forwarders and customs brokers in the United States as possible, many of whom were small mom-and-pop shops. One firm got the account, and Osram Sylvania is now working to make that firm the exclusive logistics provider for the entire company (Bowman, 1999).

Sun

"Five years ago, 80 [percent] of the dollars Sun spent went to about 100 suppliers. Today [1996], 89 [percent] is spent with 20 suppliers. In fact, Sun's top five suppliers receive about 65 [percent] of Sun's purchasing dollars." "Sun spends a lot of time working with suppliers to reduce lead times." "Three years ago, Sun was on a 200-day cycle from the time it told a supplier it needed a part to the time Sun was paid for a system it shipped to a customer. Today, it averages about 100 days; Sun wants to reduce it to 60 by next year" (Carbone, 1996).

Tennant

Tennant has deliberately whittled down its supplier base from 1100 suppliers on its rolls in 1980 to 250 active suppliers, with a relative handful (50) enjoying the lion's share of Tennant's business in 1994.

In 1979, Tennant was ordering hydraulic hoses and fittings from 16 different suppliers and was counting leaks per 100 joints. In 1985, it was down to one supplier, and leaks were down to one per 1000 joints. By 1992, Tennant had quit counting leaks per joint altogether.

In the early 1980s, Tennant had about six coating suppliers. By 1987, over 90 percent of Tennant's coatings business was assigned to one supplier.

“Prior to 1986, Tennant was getting its steel from as many as 22 different sources.” In 1995, two suppliers provided 95 percent of Tennant’s steel requirements (six specialty producers satisfy the remaining 5 percent). “When it comes to establishing closer ties with suppliers, Tennant has discovered that two is more than enough company—three a definite crowd—and has come to prefer single-sourcing in most instances . . .” (Morgan, 1995).

Xerox

From 1981 to 1985, Xerox reduced its supplier base from 5000 to 400.¹ From 1981 to 1984, net product costs were reduced by about 10 percent per year. Rejects of incoming material were reduced by 93 percent. New product development time and cost were reduced by 50 percent. Production lead times were reduced from 52 weeks to 18 weeks (Burt, 1989).

¹Morgan (1995) says Xerox’s supply base shrank from 3000 in 1982 to 300 in 1985.

INDUSTRY CONSOLIDATION TRENDS

Consolidation through mergers and acquisitions is a major trend in many industries. A central goal of most mergers has been to improve investment returns through cost cutting, productivity gains, and economies of scale (Mulligan, 1999). In this appendix, we offer summaries of consolidation trends for several key industries in which the DoD purchases goods and services, as well as figures summarizing where consolidation is and is not occurring.

THIRD-PARTY LOGISTICS

As major shippers such as Nike are pushing their vendors into expanding their menu of services, rather than turning to an unfamiliar supplier, large logistics services firms are buying small firms and/or merging with other firms to expand the scope of their services and geographical presence. For example, Ryder Integrated Logistics, Inc. is expanding through acquisitions and alliances. It recently bought the Brazilian freight forwarder Translor. In addition, APL Ltd. has used acquisitions to help it gradually extend its geographic range while adding capabilities such as intermodal transportation, contract logistics, information systems, and freight consolidation to become a worldwide logistics supplier (Bowman, 1998). Also, in the last few years, FDX, the parent of express package carrier FedEx, purchased Caliber Logistics, a third-party logistics services provider, and RPS, a ground package delivery service, to expand the scope of the services it can provide.

FACILITY MANAGEMENT

All five of the top commercial real estate services firms that provide facility management services have been through a level of consolidation in recent years. For example, Compass was bought by LaSalle Partners, which subsequently merged with Jones Lang Wooten, a European facility management services provider, to become Jones Lang LaSalle, a much larger company with more products and services. CB Commercial bought Koll to become CB Koll; then CB Koll purchased the European firm, Richard Ellis, to become CB Richard Ellis, a major competitor of Jones Lang LaSalle.

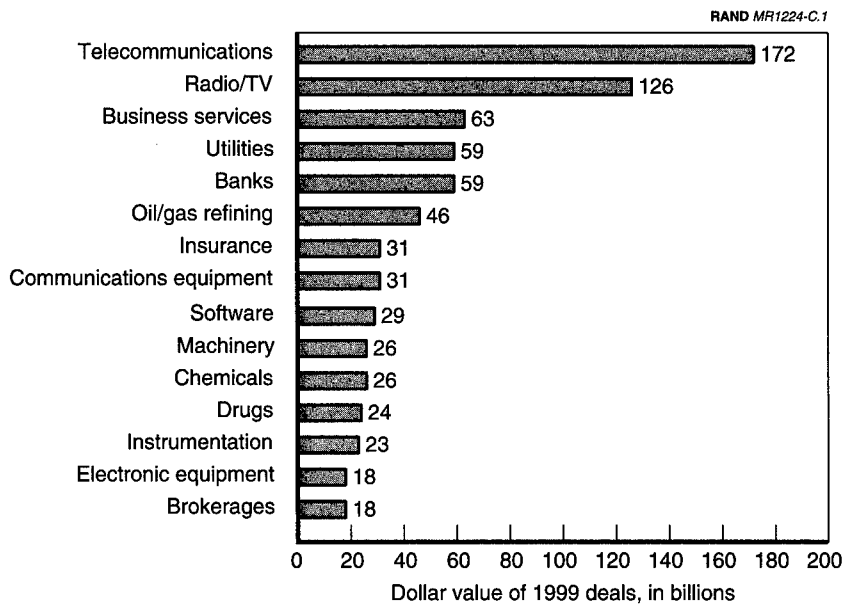
AUTOMOTIVE

Automotive parts suppliers have consolidated from 30,000 in 1988 to 8000 in 1999 and are projected to consolidate further to 2000 by 2008 (Kiplinger, August 1999). The biggest automotive-component suppliers are likely to expand at rates of 20 percent to 30 percent a year over the next five years, largely reflecting acquisitions (Simison, 1999).¹ Further, "[i]nvestment bankers and venture capitalists are buying car dealerships to consolidate them into publicly held retail chains like Wal-Mart, with all its efficiencies and cookie-cutter customer service programs" (Stern, 1995).

OTHER INDUSTRIES

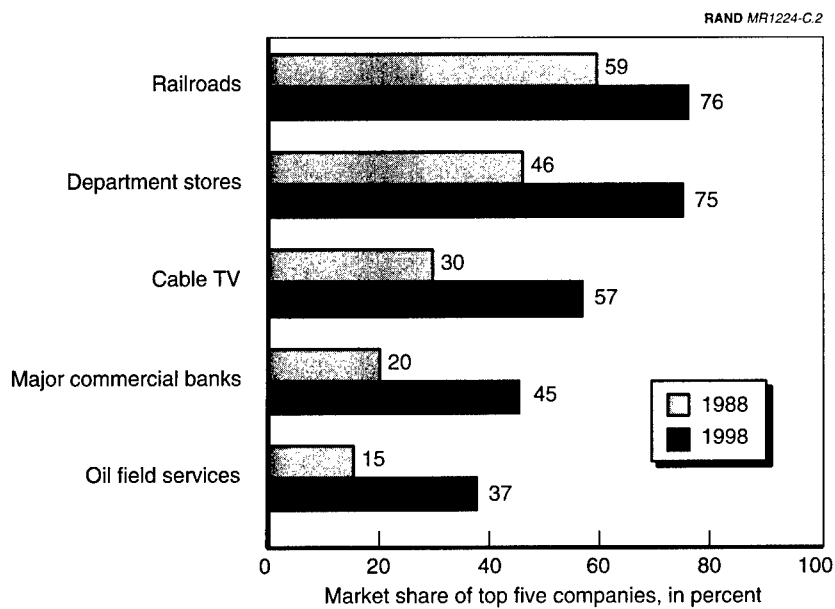
Figures C.1–C.3 illustrate these trends in the broader marketplace. Figure C.1 shows the U.S. industries with the largest dollar value of announced merger deals in 1999 (through August 12). Figure C.2 demonstrates the changing market share of the top five companies in five major industries from 1988 to 1998. Figure C.3 gives the market-share changes from 1988 to 1998 for some key U.S. industries in which market share of the top five companies has stayed fairly flat or has declined.

¹The intent of acquisitions among automotive suppliers was to grow so that they could make viable investments in information systems and in research and development to meet the needs of the large auto manufacturers. See Flannigan (1999).



SOURCE: Thomas Financial Securities Data (Mulligan, 1999).

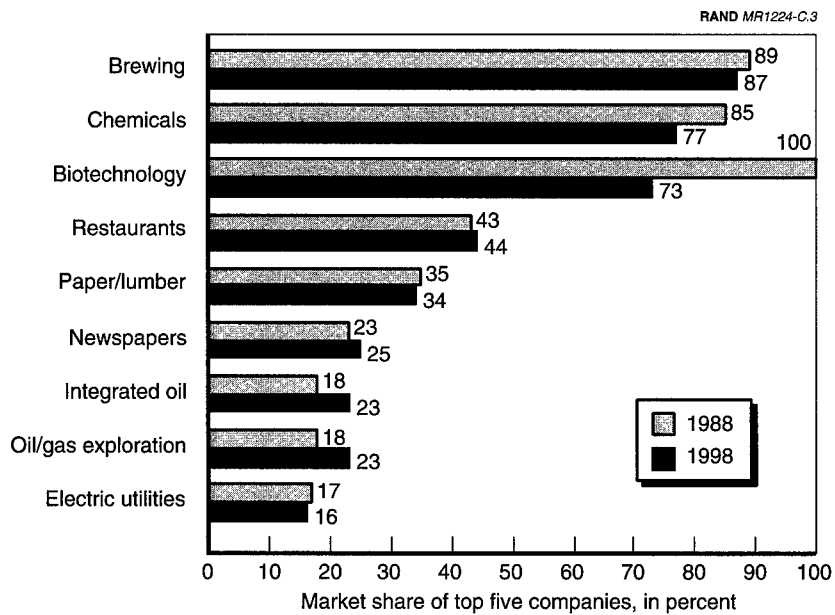
Figure C.1—Industries Experiencing Heavy Merger Activity



SOURCE: Mulligan (1999).

NOTE: Market share data reflect North American market except in case of oil field services, which is global.

Figure C.2—Industries with Growing Concentration



SOURCE: Donaldson, Lufkin & Jenrette in Mulligan (1999).

Figure C.3—Industries in Which Concentration Is Not Surging

Appendix D

SBA FINAL RULE—A DERIVED DECISION TREE FOR BUNDLING

In this appendix, we have organized the SBA's final rule¹ in a process flow or decision tree format. This is meant to supplement the discussion in the main text, providing additional details for the interested reader.

DEFINITIONS

Bundled requirement: The consolidation of two or more procurement requirements for goods or services previously provided or performed under separate smaller contracts [defined below] into a solicitation of offers for a single contract that is likely to be unsuitable for award to a small business concern because of

- the diversity, size, or specialized nature of the elements of the performance specified,
- the aggregate dollar value of the anticipated award,
- the geographical dispersion of contract performance sites, or
- any combination of these factors.

Measurably substantial benefits: Benefits [from bundling] are measurably substantial if, individually, in combination, or in the aggregate,

¹Small Business Administration (2000).

- they are equivalent to [at least] 10 percent of the contract value (including options) where the contract value is \$75 million or less, or
- they are equivalent to [at least] 5 percent of the contract value (including options) or \$7.5 million, whichever is greater, where the contract value exceeds \$75 million.

Benefits may include:

- Cost savings and/or price reduction,
- Quality improvements that will save time or improve or enhance performance or efficiency,
- Reduction in acquisition cycle times,
- Better terms and conditions, and
- Any other benefits.

The SBA has determined that *all anticipated benefits must be expressed in dollars*.² This permits computation of benefits as a percentage of the total anticipated contract award value (including options). For example, a reduction in cycle time must be converted to a dollar value in order to be compared to the other criteria such as cost savings.

PCRs: SBA procurement center representatives who are generally located at federal agencies and buying activities that have major contracting programs. PCRs review all acquisitions not set aside for small businesses to determine whether a set-aside is appropriate.

Separate smaller contract: A contract that has previously been performed by one or more small business concerns or was suitable for award to one or more small business concerns.

Substantial bundling: Any contract consolidation that results in an award whose average *annual* value is \$10 million or more.

²See the interim rule issued on October 25, 1999.

DECISION TREE

Background for new policy: The Small Business Act requires each federal agency to foster the participation of small business concerns as prime contractors, subcontractors, and suppliers in government contracting opportunities. To comply, agency acquisition planners must

- structure procurement requirements to facilitate competition by and among small business concerns, including small disadvantaged, 8(a), and women-owned business concerns, and
- avoid unnecessary and unjustified *bundling of contract requirements* that inhibits or precludes small business participation in procurements as prime contractors.

1. Are you pursuing a *bundled requirement*?

Yes → GO TO 2

No → STOP.

2. Is this requirement subject to a Cost Comparison Analysis conducted in accordance with OMB Circular A-76?

Yes → STOP

No → GO TO 3.

3. Before proceeding with an acquisition strategy that could lead to a contract containing *bundled* or *substantially bundled requirements*, an agency must conduct market research to determine whether bundling of the requirements is necessary and justified. During the market research phase, the acquisition team should consult with the applicable *PCR*.

The procuring activity must notify each small business that is performing a contract that it intends to bundle that requirement with one or more other requirements at least 30 days prior to the issuance of the solicitation for the *bundled* or *substantially bundled requirement*. The procuring activity, at that time, should also provide to the small business the name, phone number, and address of the applicable SBA *PCR*.

When the procuring activity intends to proceed with an acquisition involving *bundled* or *substantially bundled procurement requirements*, it must document the acquisition strategy to include a determination that the bundling is necessary and justified, when compared with the benefits that could be derived from meeting the agency's requirements through *separate, smaller contracts*.

- The procuring activity may determine a consolidated requirement to be necessary and justified if, as compared with the benefits that it would derive from contracting to meet those requirements if not consolidated, it would derive *measurably substantial benefits*. The procuring activity must quantify the identified benefits and explain how their effect would be measurably substantial.
- The reduction of administrative or personnel costs alone shall not be a justification for *bundling* of contract requirements unless the administrative or personnel cost savings are expected to be substantial, in relation to the dollar value of the procurement to be consolidated (including options). To be substantial, such cost savings must be at least 10 percent of the contract value (including options).
- In assessing whether cost savings and/or a price reduction would be achieved through *bundling*, the procuring activity and SBA must use as a baseline the price that has been charged by small businesses for the work that they have performed and, where available, the price that could have been or could be charged by small businesses for the work not previously performed by small business.

GO TO 4.

4. Does this requirement involve *substantial bundling*?

Yes → GO TO 5

No → GO TO 6.

5. Where a proposed procurement strategy involves a *substantial bundling* of contract requirements, the procuring agency must, in the documentation of that strategy, include a determination

that the anticipated benefits of the proposed bundled contract justify its use and must include, at a minimum:

- The analysis for the *bundled requirement* [underlying the determination that it is necessary and justified as described above],³
- An assessment of the specific impediments to participation by small business concerns as prime contractors that will result from *substantial bundling*,
- Actions designed to maximize small business participation as prime contractors, including provisions that encourage small business teaming for the *substantially bundled requirement*, and
- Actions designed to maximize small business participation as subcontractors (including suppliers) at any tier under the contract or contracts that may be awarded to meet the requirements.

GO TO 6.

6. Are the *bundled* or *substantially bundled requirements* necessary and justified?

YES → GO TO 7

NO → GO TO 8.

7. Where a *bundled* or *substantially bundled requirement* offers a significant opportunity for subcontracting, the procuring agency must designate the following as significant factors in evaluating offers:

- A factor that is based on the rate of participation provided under the subcontracting plan for small business in the performance of the contract, and

³In FAR 7.107(e), this is expressed as (1) the specific benefits anticipated to be derived from bundling and (5) a specific determination that the anticipated benefits of the proposed bundled contract justify its use.

- For the evaluation of an offeror's past performance, a factor that is based on the extent to which the offeror attained applicable goals for small business participation in the performance of contracts.

Where the offeror for such a bundled contract qualifies as a small business concern [including a team of small businesses], the procuring agency must give to the offeror the highest score possible for the evaluation factors above.

GO TO 10.

8. Assistant Secretaries with responsibility for acquisition matters (Service Acquisition Executives) may, on a nondelegatable basis, determine that a consolidated requirement is necessary and justified when

- there are benefits that do not meet the thresholds specified above but, in the aggregate, are critical to the agency's mission success, and
- the procurement strategy provides for maximum practicable participation by small business.

GO TO 9.

9. Has the Service Acquisition Executive determined that the consolidated requirement is necessary and justified?

YES → GO TO 10

NO → Proceed with unbundled acquisition strategy.

10. Does the PCR agree that the bundled or substantially bundled requirements are necessary and justified?

Yes → GO TO 11

No → GO TO 12.

11. Where bundling is necessary and justified, the PCR will work with the procuring activity to tailor a strategy that preserves small business prime contract participation to the maximum extent practicable. The PCR will also work to ensure that small

business participation is maximized through subcontracting opportunities.

12. The PCR may initiate an appeal to the head of the contracting activity. If the head of the contracting activity agrees with the contracting officer, the SBA may appeal the matter to the secretary of the department or head of the agency.

ASSIGNING MONETARY VALUES TO PERFORMANCE IMPROVEMENTS

Measuring the monetary value of performance improvements is difficult. Whenever possible, the Air Force should attempt to justify bundling decisions on the basis of cost savings alone. That said, bundling can dramatically improve performance, and fairly simple methods can be devised to approximate the monetary value of many different kinds of performance improvements.

This appendix

- offers a broad overview of the challenge of estimating the monetary value of performance improvements
- offers two examples to illustrate different ways to estimate the value of improvements
- asks how estimating the monetary value of performance improvements relates to broader Air Force efforts to reduce total ownership cost
- suggests a set of principles that the Air Force could use to structure a strategic effort to estimate the value of bundling changes that improve performance in specific ways.

A BROAD OVERVIEW

The monetary value of any performance improvement depends on what the Air Force does when that improvement occurs. If a change in bundling improves performance, the Air Force can react in one of

two ways: (1) It can pass that improvement to its ultimate customers by giving them more or higher-quality output for the services that they consume, or (2) it can maintain the level of service that it provides to ultimate customers and use the improvement to cut the cost of providing that level of service. For example, if more housing becomes available, the Air Force can make that new housing available to military families or eliminate other housing and the costs associated with it. If the support of truck engines improves, the Air Force can react by increasing the number of truck engines available for use—and by implication, the number of trucks—or it can reduce its use of other inputs to engine maintenance, like inventory, and avoid the costs associated with these inputs. The first step in asking what a performance improvement is worth is to ask how the Air Force will take advantage of that improvement.

If the Air Force decides to increase the level of a service that it provides to its customers, then the Air Force must estimate (1) how much these customers value that improvement and (2) how much the Air Force cares about what they value. For example, if the Air Force decides to use additional housing to house additional families, the Air Force can avoid the cost of the housing allowances it would pay these families if they lived outside an Air Force Base. But housing allowances often fail to cover the total cost of living off base. The families affected would value this improvement in terms of the full reduction in the cost of living they experience when they are able to move on base.

Does the Air Force care only about its out-of-pocket cost for housing allowances or the total cost its members experience in meeting their housing costs? The answer depends on how the Air Force wants to think about benefits. The total amount that families spend on housing is relevant to these families' perception of their quality of life and hence relevant to questions of force morale and retention. Those in the Air Force most responsible for housing policy—those responsible for military compensation and base housing—should have useful perspectives on this question. Involving them will help the Air Force decide how to frame its approach to estimating the value of bundling-induced improvements in housing. They may also have useful analytic tools that the Air Force can use to do the estimation itself; we return to this below.

If the Air Force decides to hold the level of a service constant and use an improvement to reduce its costs, then it must (1) specify how it will do that and (2) determine how doing so will affect costs. For example, if a change in bundling increases the amount of housing available, the Air Force could identify military family housing with similar characteristics—suitable for similar military families—but high operating costs. By ending its use of this alternative housing, it could eliminate the utility, maintenance, and other costs associated with the substitute housing.

Or the Air Force could identify the highest-cost military housing in the relevant housing market, even if it was suitable for different types of families, and stop using that housing. In that case, the associated costs of utilities, maintenance, and so on would fall more, and total housing allowances or housing expenditures by military families might increase or decrease. The Air Force should calculate an appropriate total amount to reflect this change in costs and use that to value the initial increase in availability of family housing.

Again, choosing how to eliminate housing and how to value the cost savings associated with this change will be easier if functional experts on military compensation and family housing programs participate.

The basic point here is that any bundling-induced improvement will lead to an Air Force reaction. The Air Force cannot place a dollar value on the improvement without understanding (1) how the Air Force is likely to react, (2) how that reaction will affect dollar costs, and (3) which dollar costs are relevant to the Air Force. The functional subject matter experts that help the Air Force react to the improvement can naturally help in answering each of these three questions.

If the Air Force conducted a detailed analysis of how it would react to every bundle under consideration, the cost of the analytic effort would quickly overwhelm any value from improved bundling. The Air Force needs simplified or stylized methods to develop answers to these questions. It is unrealistic to expect that any single template or algorithm could help the Air Force value any bundling-induced improvement in performance, but it should be fairly straightforward to apply the train of thought suggested here to particular kinds of improvement. By doing this and refining these approaches over time,

the Air Force should be able to develop a ready set of analytic tools that it can apply to bundling questions. The next section illustrates this idea in two different Air Force settings.

TRANSFORMING AN AIR FORCE REACTION INTO A MONETARY VALUE: TWO EXAMPLES

This section illustrates how to develop simple analytic methods that can be used to value performance improvements when the Air Force reacts to them in two different ways.

- The first example extends the discussion of family housing to suggest simple analytic gambits that the Air Force can use when it reacts to an improvement by increasing the output that it provides to its ultimate customers.
- The second example considers an equipment maintenance case, where the Air Force wants to ensure the availability of a given number of assets and reacts to any improvement in the availability rate by reducing the total number of assets in a way that holds the total number of available assets constant.

Each example posits a plausible Air Force reaction to an improvement without endorsing that reaction. The examples focus on translating a response into a monetary value, not on choosing the appropriate response itself.

Example 1: Improved Provision of Family Housing

Suppose that a change in bundling makes it possible to vacate one family, prepare a family housing unit for a new occupant, and move the new occupant in more rapidly. For example, a bundle that includes coordinated management of cleaning crews, painters, carpenters, electricians, plumbers, furniture management, inspectors, and moving services might allow an approach that turns such housing units much faster. How much would the Air Force value such an improvement?

The most obvious measure is the housing allowance relevant to this change. Each day of reduced delay reduces by a day the housing allowance that the Air Force must pay. But housing allowances differ

across grades and family types; how can the Air Force know exactly how much in allowances will be saved? A simple approach could use, for each location affected, a simple average allowance per day for officers, another for senior enlisted, and a third for junior enlisted. The Air Force has all the data required to calculate such averages at each location and to update them as allowances or numbers of families on base change over time. Modern spreadsheets make this easy to do. The Air Force could offer these factors to potential providers, who could then use them to determine how big a reduction in delay is cost effective, given their capabilities.

Factors based solely on housing allowances do not typically capture all cost savings relevant to military families. The Air Force has estimates of the percentages of total costs covered by housing allowances. It could use these percentages to adjust the factors above. If relevant stakeholders demand more accuracy, location-specific adjustments could be made, although they impose increasing demands on local analysts because the relevant percentages change over time and at different rates in different places.

If the Air Force seeks still greater accuracy, it can access commercial databases on the cost of living in different locations. With some effort, the Air Force could link the housing types in these databases to the housing requirements it associates with different grades and family types.¹ Important index problems arise here, but they are well understood and easily managed.² Alternatively, the Air Force could estimate its personnel's demand for family housing and use the resulting model to impute what different family types pay for housing in different settings.³

This discussion raises a number of issues.

- First, many options are available to measure the value of improvement, even after the Air Force determines that it seeks the value of reducing time in off-base housing by one day. This will

¹The Bureau of Labor Statistics uses an approach like this. See, for example, U.S. Department of Commerce (1988).

²For more information on this approach, see Mark and Goldberg (1984), Palmquist (1980), and Follain et al. (1979).

³For more information on this approach, see Camm and Praskac (1990).

typically be true. In general, the Air Force will prefer the simplest option that the key stakeholders can agree on.

- Second, some options will tend to be more inclusive than others. For example, using a housing allowance is more conservative than seeking information about total family expenditures off base. If the Air Force can justify a bundle with a simpler, less inclusive measure like the housing allowance, it does not make sense to spend more time on analysis that will only increase the value of this measure by being more inclusive.
- Third, much of the information that the Air Force needs may already be available within relevant Air Force communities. In this case, the value of housing allowances is well known. Ongoing assessments of military compensation periodically examine other issues raised here. These assessments may have already developed the information that the Air Force needs to provide a consensus-based estimate of value.
- Fourth, commercial sources of information can be helpful, but they are probably not the first place to look and very well may not be necessary. Relevant functional communities offer the best place to get started. Keeping them involved is likely to improve effective use of any commercial support sought.

Example 2: Improved Provision of Equipment Maintenance

Suppose that a change in bundling could improve the availability of Air Force equipment (for example, air conditioning, commercial-type vehicles, ground-support equipment, or even aircraft and other major end items). This might occur if maintenance were effectively bundled with materiel management or with analytic capabilities that improve demand forecasting, production management, management of parts relevant to time awaiting parts, or life-cycle management of assets. In this case, the Air Force is likely to perceive a required level of service from the equipment assets in question. If an improvement allows a higher level of availability for the "fleet" as a whole, the Air Force might very well react by reducing the size of the fleet.

In this case, the bundling-induced improvement reduces the optimal number of assets required to produce a given level of service, allow-

ing the Air Force to sell some assets, if a commercial market exists for them, or to choose not to replace or repair existing assets that are no longer needed. A sale would generate income; early retirement would avoid repair and replacement costs. How should the Air Force value this change?

The most straightforward approach would be brute force: (1) Determine how many assets are now considered to be surplus, (2) determine which can be sold at what salvage prices, and (3) for the remainder, choose a planning horizon of, say, eight years. Over that horizon, estimate when these assets would have been retired, what their maintenance costs would have been before then, and what their replacement cost would have been upon retirement. Total the salvage values and forgone costs, appropriately discounted. This approach is tedious and is likely to require information that the Air Force does not routinely maintain. But it is well within the capabilities of the Air Force's existing operations research shops.

Aside from the considerable effort required to execute such a study, it has the disadvantage that it does not yield simple planning factors that the Air Force could deliver to potential providers. Such factors would simplify (1) potential providers' ability to choose bundles that increase the availability of assets in a cost-effective manner, and (2) the Air Force's ability to compare alternative offers that claim to increase such availability.

An alternative approach uses simple planning factors to calculate the life-cycle cost of acquiring and maintaining each asset and assumes that the Air Force can avoid these costs for each asset in surplus. This approach is rough and ready, but it relies on data that can be extracted from existing Air Force management systems fairly quickly. Data include

- Acquisition cost
- Expected service life
- Expected operating hours per year
- Expected repair ("demand") rate per operating hour
- Expected direct maintenance man-hours per repair
- Expected real wage per direct man-hour

- Expected material costs per repair
- Expected time in repair.

This approach yields a simple planning factor that the Air Force can supply to potential offerors to tell them how it will value improvements that reduce its need to maintain important assets.⁴

This example confirms observations drawn from the first example:

- Alternative measures of value are available; the Air Force should seek the simplest that the key stakeholders will accept.
- The Air Force already has data, models, and skills relevant to measures of value that reside in the functional communities responsible for the activities in question. The bundling questions raised here may pose new applications of existing data, models, and skills, requiring some new training and posing new workloads on Air Force analysts. But the basic analytic elements already reside in the Air Force.

Thinking more broadly, each type of performance improvement is likely to present a similar set of questions that must be answered in a particular setting. These examples should be understood as specific illustrations of a general approach. That said, they are consistent with the Air Force's current views on "total ownership costs." As the Air Force improves its ability to measure and manage total ownership cost, it should also improve its ability to value a wide variety of improvements in performance. The next section briefly reviews the new concept of total ownership cost.

GENERAL EFFORTS TO REDUCE TOTAL OWNERSHIP COST

DoD is currently committed to seeking performance improvements that reduce the "total ownership costs" of weapon systems and other assets. The Air Force is developing initiatives to do this in its "Reduction in Total Ownership Cost" (R-TOC) program. Although

⁴The Air Force has used this approach to measure the value of improvements in the repair of F-16 avionics components at Ogden Air Logistics Center. Contact Frank Camm at Frank_Camm@rand.org for details.

this program began by focusing on the costs of weapon system support, the Air Force is now extending it to base-related activities, precisely the kinds of activities relevant to typical bundling decisions. The view of performance provided by the Air Force R-TOC program offers an already established Air Force approach that it can apply when valuing the performance improvements offered by bundling. Relying on total ownership cost, defined in this way, simplifies things by allowing the Air Force to draw on a preexisting costing approach and promotes consistency by offering a single approach to value all performance improvements.

At its heart, total ownership cost is simply life-cycle cost; in fact, guidance from the Office of the Secretary of Defense now states that total ownership and life-cycle costs are equivalent. But total ownership cost suggests a new emphasis on seeking costs not normally included in traditional decisionmaking. Consider an example. Traditional analysis of the life-cycle cost of an asset—say, a vehicle—typically considers its purchase price and the dollar outlays required to pay for materiel and labor hours consumed in maintenance over its lifetime. But it does not necessarily include the cost of inventory—a spare or back-up vehicle—required to stand in for an asset while it is in repair. And it rarely includes the value of activities forgone if the asset is not replaced while in repair—the value-added provided by that vehicle in its normal day-to-day use. Total ownership cost explicitly considers such costs. It is by its very nature more inclusive than traditional life-cycle costs. Total ownership cost includes all the costs associated with an asset over its lifetime, including some often not captured by traditional analysis.

These uncaptured costs are critical to the valuation of improved performance. The examples above illustrate this idea. The family housing example captures the cost of housing allowances or, more broadly, family housing expenses off base in a way that informs a change in family housing on base. The equipment maintenance example captures the total costs that the Air Force can avoid if it can effectively reduce its demand for equipment. As the Air Force expands its development of R-TOC databases, it should become increasingly easy to value policies that affect the total ownership costs measured by these databases.

A SET OF PRINCIPLES FOR MEASURING THE VALUE OF IMPROVED PERFORMANCE

As the Air Force formulates a strategic approach to valuing performance improvements associated with alternative bundles, it should seek to develop appropriate formulas and rules of thumb to help potential providers value a variety of specific improvements in performance. These formulas and rules of thumb should not preclude alternatives offered by providers. Rather, the Air Force should develop and offer them with the following goals in mind. The formulas and rules of thumb should:

- Reflect a basic understanding of how the Air Force is likely to react to a performance improvement and how that reaction is likely to affect total ownership cost.
- Be as simple as possible, so long as they reliably document improvements that exceed the stated threshold.
- Provide enough information about how the Air Force values performance improvements so that potential providers need not guess about these values and can focus on bringing their own information to the formulas.
- Be accepted by all the key players so that, when they are applied, discussion can focus more on the provider inputs than on the formulas themselves.

In all likelihood, controversies will arise and formulas will have to be adjusted over time to sustain consensus. Potential providers will propose alternatives to the Air Force formulas that actually meet these criteria better than the proposed Air Force formulas. But a simple, principled, consistent approach that stays focused on identifying when an improvement moves beyond a threshold level of total ownership cost should sustain a constructive ongoing dialogue among all the interested parties, including potential providers.

The development and maintenance of such formulas and rules of thumb would presumably be the responsibility of the Air Force organizations responsible for maintaining the Air Force's strategic approach to bundling, as discussed in Chapter Six. The discussion here helps explain why relevant functional communities should partici-

pate in this strategic approach. The organizations responsible for bundling policy should also coordinate their activities with ongoing Air Force R-TOC activities to take advantage of synergies and ensure consistency in the Air Force's interpretation of total ownership cost in different settings.

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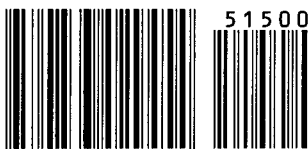
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FEDERAL CONTRACT BUNDLING: A FRAMEWORK FOR MAKING AND JUSTIFYING DECISIONS FOR PURCHASED SERVICES

An organization "bundles" the services that it purchases when it consolidates activities previously provided by separate sources and purchases the services through a single contract from a single provider. The Department of Defense is giving increasing attention to this practice because commercial firms report that bundling has potential performance and cost benefits. However, the goals of the federal government differ from those of commercial firms in that federal regulations commit the Air Force and other federal organizations to place "a fair proportion" of purchases and contracts with small business enterprises and to maintain free and open competition among prospective providers of services to the federal government. Small businesses typically do not have the scale of operation or scope of expertise to provide bundles of services as prime contractors. The authors discuss recent legislation designed to protect small businesses by ensuring that bundling occurs only when it is likely to generate "measurably substantial" increases in performance or reductions in cost to the federal buyer. The authors propose a methodology that buying agencies could use to gather information on when and how to bundle the services they buy and justify those decisions in a way that satisfies the legislative requirements.

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